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VOLUME IV. NUMBER 10.

BULLETIN 45.

WEST VIRGINIA
AGRICULTURAL EXPERIMENT STATION
MORGANTOWN, W. VA.

CHICKENS.

DR. JOHN A. MYERS.

Let your family and neighbors read this Bulletin. No scientific matter in it.

DECEMBER, 1896.

INNOCENCE.

"I hain't seen nuffin of yer Chickens! Do yer see any Chickens 'bout me? Go 'way dar, white man! Treat a boy 'spectable if he am black!"

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PREFACE.

The object in presenting this Bulletin is to stimulate an interest in the Poultry industry in this State, and to afford convenient information for farmers who have not had access to poultry literature. The information is compiled from a variety of sources, which are familiar to those who have been devoting special attention to the poultry industry.

Nothing of a strictly scientific nature will be found in this Bulletin. We have endeavored to present everything in the simplest possible language, and we ask the farmers who may receive it to call the attention of their families to it so that they may all become acquainted with the facts contained therein. We shall endeavor to reach over 30,000 homes in our State with this Bulletin, and trust that our farmer friends may read it carefully and profit by any information contained therein.

Space precludes our treating of any branches of the poultry industry except chickens. If experience should indicate that good will result from similar Bulletins upon other branches of the poultry industry, they will be issued from time to time.

We are devoting a large share of the energies of our Experiment Station to the investigation of poultry problems, and in future shall have data based upon our experimental work, which will be submitted in regular form.

If any one is disposed to look lightly upon the poultry industry of the country, he should be reminded that according to carefully gathered statistics, this industry appears to represent more wealth in the country than the cotton crop, the wheat crop, or almost any of the ordinary farm crops which have been prized so highly as sources of wealth and prosperity in this country. It is eminently adapted to West Virginia.

JOHN A. MYERS.

Morgantown, W. Va., Dec. 6th, 1897.

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JUDGING POULTRY.

Persons wishing to learn the art of judging poultry, should secure a copy of the "Standard," issued by the American Poultry Association, published by the American P. Association, which is modified from time to time by the Association, to indicate the changes in the different breeds which may have attained sufficient permanent characteristics to justify their being recognized as permanent breeds. In conjunction with this, we commend most heartily to the consideration of poultry raisers a little work entitled, "The Philosophy of Judging," edited by Felch, Babcock & Lee; and published by W. D. Page, Fort Wayne, Indiana. With these two works, it is possible for persons interested in poultry, in a short time to learn the best methods of judging poultry. For persons who wish to begin, we suggest that they study the following scale which is taken from the "Philosophy of Judging." Each of the main heads counts 10; and a perfect fowl would be scored by this scale, 100. For the sake of convenience, each of the main heads are divided in two parts; one "Form" and the other "Color" except for "Weight" and "Condition." Each of these is scored 5. The foundation of the system is, that if every part of a fowl is perfect, the fowl itself is perfect. The person judging the fowl runs over it in detail, and if there are any defects in any of the parts indicated, a proper deduction which is indicated in the table of cuts given below for these defects, is made, and the sum of the cuts deducted from 100 leaves the proper score of the bird. For example, a bird scoring 90 is defective, or falls below the standard of that bird 10%. An examination of the score card will show where these defects exist. Perhaps its neck was slightly too long; its wings set a little too low; its

its breast too flat; its back too narrow; its color somewhat defective; its comb a little crooked, etc.

A successful breeder of fine poultry should be a good judge of poultry in order to select the proper stock for breeding purposes and properly mate them.

Terms and Definitions.

Barring—The stripes across a feather extending from side to side as in the barred Plymouth Rock.

Breed—A race of fowls having common characteristics. It may include several varieties, but is less comprehensive than a "Class of Fowls."

Beard—A bunch of feathers under the throat, as in the Houdans and Polish.

Broody—Having an inclination to sit.

Carunculated—Fleshy protuberances, as on the neck of a turkey cock.

Carriage—The upright attitude of a fowl.

Clutch—The eggs set under a hen, duck, or turkey.

Cockerel—A young cock, not a year old.

Crest—Top-knot of feathers, as on heads of Polish.

Cut—The deduction made for defects in certain parts of the fowl.

Crop—The first stomach of a fowl, where the food is prepared for digestion.

Cape—The feathers extending around just under the hackle, which presents the appearance of a cape, from which it takes its name.

Cushion—The mass of feathers over the rump of the hen, which more or less covers the tail; prominent in some of the Asiatic breeds.

Class of Fowls—This embraces a number of breeds possessing some general characteristics, such as the Bantam class, under which there are several breeds.

Dubbing—Shearing of the wattles, ear lobes and comb, close to the head so as to leave it smooth.

Decimal Scale--A convenient scale for determining the degree of perfection of the chicken.

Disqualifications—The term used in the "American Standard of Perfection" to indicate those defects in a fowl which will prevent it from being classed with any particular breed. A disqualified bird cannot be exhibited in competition with other birds of a particular breed.

Ear-lobe—Fold of skin hanging from the ear.

Face—The bare-skin from top of bill around the eyes.

Flight-Feathers—The primary wing feathers, used in flying.

Fluffs—Downy feathers around the thighs.

Fertile—Producing eggs that will hatch.

Hackles—The narrow lance like feathers on a fowl's neck and the posterior of the back.

Hen-Feathered, or Henny—A cock without long, sickle shaped tail feathers. Tail like a hen's.

Hock—Elbow joint of the leg. The scaly part of the leg.

High-Flyer—A chicken of easy flight, difficult to retain within enclosure.

Keel—The breast bone.

Leg—The shank from elbow down.

Leg-Feathered--Having feathers growing on outside of shank, same as Brahmas and Cochins.

Leaf-Comb—The form of comb seen in some of the crest varieties; a V-shaped comb.

Mossy—Uncertain markings.

Pea-Comb—A snug triple comb.

Penciling—Small stripes running over a feather, usually length-wise of the feather, and sometimes taking the general outline of the feather.

Poult—A young turkey.

Profile—The half of the chicken that is visible when standing on a level with the eyes.

Primaries—These are the long feathers of the wings not usually seen when the wing is closed, being concealed under the secondary feathers until the wing is spread for flight. Usually

the primaries are of similar color to the tail feathers; breeders attach importance to their color.

Pullet—A female, under one year old.

Prolific—Producing a large number of eggs.

Rose-Comb—A comb which has the upper surface more or less wavy or covered with small points. This may be seen in the Hamburgs, Rose-Comb, Leghorns, and the Wyandottes.

Saddle—The posterior of the back. The feathers of it are called saddle feathers or saddle hackle.

Score-Card—The certificate of character for the chicken. Its degree of perfection as estimated by a competent judge.

Secondaries—The portions of the wing which are visible when the bird is standing at rest. The quill feathers near the base of the wing.

Self-Color—Solid color, as black, or white.

Sickles—The upward curving feathers of a cock's tail.

Spangled—Spots on the feather of different color from the ground color of the feather.

Scale of Points—The values attached to the different parts and qualities of a chicken, in judging or grading it. A perfect chicken is valued at 100 points.

Symmetry—The perfection and harmony of all parts of a fowl, considered as a unit. A perfectly symmetrical bird would be an ideal bird of any variety, that would score 100.

Strain—A particular race of fowls having an individual character of its own developed by a breeder carefully selecting and mating his fowls. A division of a variety.

Single-Comb—A single, fleshy, serrated mass, varying in size and depth of serration, rising from near the base of the beak and extending back some distance on the head. In females, it frequently hangs over on the side of the head, as in the case of the Single-Comb Leghorns.

Squirrel-Tailed—A tail bending forward over the back, in front of a perpendicular line erected from the roots of the tail.

Stag—A game cockerel. A young game cock.

Station—A term used to embody style and symmetry in game fowls.

Surface-Color—The color of the plumage limited to the webbed part of the feather.

Twisted-Comb—A comb which has two opposite curves when viewed from the top.

Vulture-Hock—Stiff feathers growing out of the thighs, and extending nearly straight back in rear of hock.

Variety—Fowls which possess common characteristics. Narrower in the application than "breed."

Wattles—The red, fleshy excrescences under the throat, as of a cock or turkey.

Wing-Bar—A dark line across the middle of the wing.

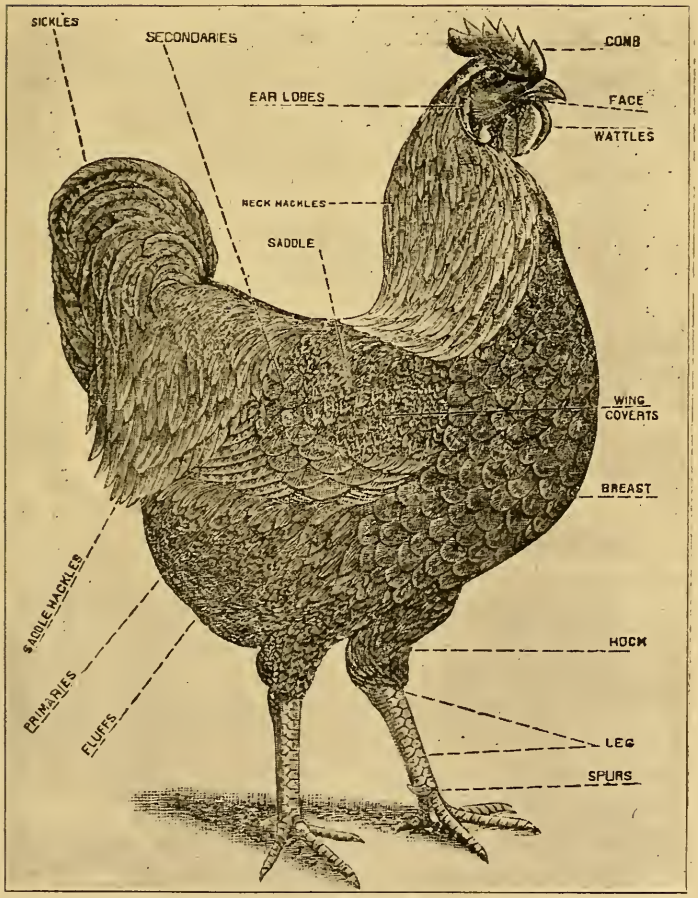
Wing-Coverts—Feathers covering the roots of the secondary quills.

Web—This is applied to the flat skin between the toes, to the triangular skin shown when wings are extended, and to the plume portions of the feathers.

Wing-Bay—The triangular section of the wing below the wing bar; and is due to the exposed portions of the secondaries when the wing is folded.

Wing Bow—The shoulder part of the wing.

Wing-Fronts—This is the portion of the wing that stands out at the shoulder; generally seen prominently in the Indian Games. The front edge of the wing.



Cut showing application of terms in judging a fowl.

Form of Score Card.

Different judges score according to slightly different systems. A very simple form of score card is "A," the form we generally use at the Experiment Station, which is as follows:

"A"

SCORE CARD.

For..... No.....

Weight and Condition	Weight.....	Condition.....
Comb and Crest	Form.....	Color.....
Heads and Adjuncts	Form.....	Color.....
Neck	Form.....	Color.....
Back	Form.....	Color.....
Breast	Form.....	Color.....
Body	Form.....	Color.....
Wings	Form.....	Color.....
Tail	Form.....	Color.....
Legs and Feet	Form.....	Color.....
Total Cuts.....		Score.....
Remarks.....		

.....

.....

.....Judge.

Another form is "B," which is as follows:

SCORE CARD "B."

WEST VIRGINIA AGRICULTURAL EXPERIMENT STATION.

Morgantown, W. Va.

Date ..... Ring .....

Entry ..... Weight .....

Sex ..... Breed .....

Name and address of Exhibitor .....

	COLOR.	SHAPE.
*Symmetry		
Weight		
Condition		
Head		
Comb		
Wattles and Ear-Lobes		
Neck		
Back		
Breast		
Body and Fluff		
Wings		
Tail		
Legs and Feet		
Crest and Beard		
Eyes		
Hardness of Feathers (in games)		
Total Cuts		
Score		

Remarks .....

.....

.....Judge.

.....Secretary.

*We think this should be omitted, as it causes a double cut if the bird has been properly scored.

Cuts for Condition.

For Light Brahma, taken from the Philosophy of Judging. Modify to suit the Breed of Chickens.

Too fat or too lean	½ to 2
Weeping eye	1
Distemper	1
Roughness of shank	½ to 3
Uncleanliness	½ to 2

Cuts for Form.

COMB.

Crooked middle section	1
All three sections crooked	1½ to 3
Too large	½ to 1½

HEAD.

Narrowness of skull	½ to 1
Very small wattles	2
Very large wattles	½ to 1
Lack of throat in hen	1

NECK.

Too long	½
Too short	½
Too straight	1
Scanty hackle, causing slim neck	½ to 1
Too long and flowing hackle	½

BACK.

Too straight or roached	½ to 1½
Narrow in front of tail	½ to 1
Convex saddle	½ to 1

BREAST.

Flatness	½ to 2
Lack of forward sweep	1

BODY.

Flatness of sides and narrowness of fluff	½ to 1

WINGS.

Twisted feathers	1 to 2
Imperfect folding	½ to 1½

TAIL.

Carried too high	½ to 1
Carried too low	½ to 1
Close and pinched	1 to 1½
Spread too much	½
Straight sickles	1

LEGS AND FEET.

Approach to vulture hock	½ to 2
Shanks too short	½
Shanks too long	½ to 1½
Knock-kneed	½ to 3
Too light leg feathering	½ to 1
Bare outer toe	1½
Bare middle toe	1

Cuts for Color.

NECK.

Want of striping in hackle	½ to 3½
Faded color in stripes	½ to 2
Smutty lacing	½ to 2
Solid black for two inches from point	1½
Faded stripe in hen's hackle	½ to 3

BACK.

Gray or slaty shading on surface	½ to 1
Black ticks over shell-bone	½
Black ticks extending across the back to hackle	Disqualify
Dark slate spots in back of female	½ to 1½
Yellow tinge	½ to 1½

WINGS.

White in primaries of male	½ to 3
White in upper edge of secondaries (male)	½ to 3
Yellow tinge on coverts	1 to 1½
Primaries of females, more than one-half white	½ to 2
Secondaries of females, more than one-half white	½ to 2

TAIL.

White in sickles two inches from body	1
White in sickles above coverlets	1 to 1½

White coverts	1
White on main tail feathers	1
White tips on main tail feathers	1
White coverlets on female	1
White main tail feathers one-third length	1 to 1½
White tips, main tail feathers	1 to 1½
"Cotton tail"	1 to 2½

LEGS AND FEET.

Pale straw color on hen's shanks	½

Weights.

Disqualifying Weight Limit.	Cockerel.	Cock.	Pullet.	Hen.
Dark Brahma	7½ lbs.	9 lbs.	5½ lbs.	7 lbs.
Light Brahma	7½ "	9 "	6 "	7½ "
All Cochins	7 "	9 "	5 "	7 "
Langshan	7 "	9 "	5 "	6 "

Standard Weight.	Cockerel.	Cock.	Pullet.	Hen.
Light Brahma	10 lbs.	12 lbs.	8 lbs.	9½ lbs.
Dark Brahma and All Cochins, except*	9 "	11 "	7 "	8½ "
Langshan	8 "	10 "	6 "	7 "
Cornish Indian Games	7½ "	9 "	5½ "	6½ "
Javas and all Plymouth Rocks	8 "	9½ "	6½ "	7½ "
All Wyandottes and Am. Dominique	7½ "	8½ "	5½ "	6½ "
W. Dorking	6½ "	7½ "	5 "	6 "
S. S. Dorking	7 "	8 "	5½ "	6½ "
Colored Dorkings	8 "	9½ "	6 "	7½ "
All Minorcas	5½ "	8 "	5½ "	6½ "
Red Caps	6 "	7½ "	5 "	6½ "
Jersey Blues	8 "	10 "	5 "	7 "
Houdan	6 "	7 "	5 "	6 "
La Fleche	7½ "	8½ "	6½ "	7½ "
Creve Coeur	7 "	8 "	6 "	7 "

*White Cochin Cock, 10½ lbs.

Disqualifying Weight Limit of Bantams.	Cockerel.	Cock.	Pullet.	Hen.
Cochin Bantams except Buff..	30 oz.	34 oz.	28 oz.	30 oz.
Buff Cochin Bantams.....	28 "	32 "	26 "	28 "
Other Bantams except Game.	26 "	30 "	24 "	26 "

Standard Weight.	Cockerel.	Cock.	Pullet.	Hen.
Cochin Bantams except Buff....	26 "	30 "	24 "	26 "
Buff Cochin Bantams.....	24 "	28 "	22 "	24 "
All Others except Game.....	22 "	26 "	20 "	22 "

Description of Breeds.

American fanciers recognize ten classes of chickens. Each of these classes has a general stamp or character which may be readily recognized as characteristic, and are distinguishing features of that particular class. The first class is the American, which includes five breeds:

BREED.	VARIETIES.
Plymouth Rock	Barred, Buff, Pea-Comb Barred, White
Wyandotte	Silver, Golden, White, Buff, Black
Java	Black, Mottled, White
Dominique	American
Jersey Blue	Jersey Blue

To this class may also be added American Wonder, black and white; Rhode Island Reds, Argonauts, Sherwoods, and other breeds not yet sufficiently established to be admitted to the fancier's standard.

This claim is characterized by a great variety of plumage, some of the birds having great beauty. They are general purpose chickens, are superior layers, and most of them make at-

tractive dressed poultry. They are, generally, well adapted to the conditions of our American farms, are hardy, active, early maturing; they are sitters but may be easily broken up. As mothers they are inferior to the Asiatics. For general farm purpose these breeds stand at the head of the list.

The second class is the Asiatic which includes the following:

BREEDS.	VARIETIES.
Brahma	Light Dark
Cochin	Buff Partridge White Black
Langshan	Black White

All these are characterized as large, heavy birds with feathered legs and clumsy movements. They are among the largest birds that we have. They have gentle disposition, and as a class, are quiet, lazy, easily confined, and bear restraint well. They make good mothers, are good sitters, and fairly good layers. They are desirable upon the farm for winter layers, and as mothers for taking care of the chicks of non-sitting varieties. If used for broilers they should be crossed with other breeds.

The third class of fowls is the Mediteranean which includes the following:

BREEDS.	VARIETIES.
Leghorn	Brown Rose Comb Brown White Rose Comb White Black Dominique Buff Silver Duckwing Red Pyle Leghorn (?)
Minorca	Black White
Andalusian	Blue
Spanish	White Face Black

The Mediterraneans are characterized by their active, nervous movements, and are smaller birds than the American class. The development of the comb of the female is peculiar in the single comb varieties in that it hangs over one side of the face, well down over the eye, and in the male by the development of very large and erect single comb. The rose combs are also characteristic in these varieties. These birds are probably the greatest egg producing machines that we have. They are prominently egg producers. They are all classed as non-sitters, though occasionally a hen becomes broody, but even in that case they are unreliable mothers,

The fourth class is the Polish, which includes the following:

BREED.	VARIETIES.
Polish . .	White Crested Black Golden Silver White Bearded Golden Bearded Silver Bearded White Buff Laced

All the birds of this class are crested or carry topknots, and some of them are bearded. The fowls and eggs of this breed are small, but they are prolific layers and are much admired by fanciers. They are not well adapted for the country where hawks can drop down upon them without their being aware that an enemy is approaching them from above. Recently the Polish class seems to have improved somewhat, as it had been undoubtedly weakened by the efforts of fanciers to produce particular feather developments rather than strength of body.

The fifth class is the Hamburg, which includes the following varieties:

BREEDS.	VARIETIES.
Hamburg . .	Golden Spangled Silver Spangled Golden Penciled Silver Penciled White Black

Redcaps . .	Silver
Campines . .	Golden

Most of the birds of this class are characterized by beautiful pencils or spangles, and are much admired on account of their beautiful plumage. As a class they are excellent layers, producing a large number of rather small eggs. Their bodies are small. They are nervous, active birds, very difficult to confine. They are classed with the non-sitters, and have sometimes been called perpetual layers. All of them, except the Campines, have rose combs, the Campines being single comb Hamburgs recently introduced.

The sixth class in the French, which includes the following:

BREEDS.	VARIETIES.
Houdan	Mottled
Crevecoeur	Black
La Fleche	Black

All of this class have the leaf or V shaped comb, the plumage of the Houdan being mottled black and white, and that of the other two breeds being black. The Houdan has five toes and is crested. The Crevecoeur has a large protuberance on top of the head, and is black, having four toes. The La Fleche is black, and has a branching antler-like comb which stands up like two horns.

The French class are considered good layers, and are superior for table purposes. The Houdan is likely to grow in popularity as it becomes known.

The seventh class is the English and consists of the following:

BREED	VARIETIES.
Dorking .	White Silver Gray Colored

This class is characterized by five toes. The birds are of medium size, of rapid development and are prized as table fowls. The body is long, deep and full, and the neck and legs short, giving it a very substantial appearance. They are good layers.

The eighth class is the Games and include the following:

BREEDS.	VARIETIES.
Game	Black Breasted Red Brown Red Golden Duckwing Silver Duckwing Red Pyle White Black Birchen
Game Bantam	Black-Breasted Red. Brown Red Golden Duckwing Silver Duckwing Red Pyle White Black Birchen
Indian Game	Cornish
Malay	Black-Breasted Red

The Game fowls are characterized by a stately carriage, and have small single, or strawberry erect combs and small wattles. It has been the fashion to dub the birds, or cut off the combs and wattles, which produces a fierce, war-like appearance. The birds that are bred according to the standard are seldom used for fighting purposes, but are employed for exhibition and practical uses. They are a hardy race, having great muscular development about the breast, and are valuable for crossing upon other breeds. Game hens make the best of mothers and are very courageous in defending their broods from enemies. The Indian Game is a large, attractive bird, recently introduced from England and is particularly recommended for crossing with other fowls for market purposes. There are a number of breeds of this class that have considerable merit, especially as table fowls.

The ninth class consist of Bantams other than Game, and are as follows:

BREEDS.	VARIETIES.
Sebright	Golden Silver

Rose-Combed .	White Black
Booted . .	White
Cochin . .	Buff Partridge White Black
Japanese .	Black-Tailed White Black
Polish . .	White-Crested White

All the birds of this class are used purely for fancy purposes. The standard weight of the cocks being about 26 oz. and the hens 22 oz. They are bred for pets and for purely ornamental purposes. Often in the neighborhood of the city a profitable business can be built up in breeding them as pets for children; and frequently wealthy people like to have a few of them in their yards. Their meat is said to be excellent, and their eggs, though small, are fine flavored. The Golden Sebright is probably the most popular of the varieties.

The tenth class comprises miscellaneous chickens, such as the following:

	VARIETIES.
Russian . . .	Black
Sumatra . .	Black
Silky . . .	White
Sultan . . .	White
Frizzles . . .	Any Color
Rumpless . . .	Any Color

These breeds are little known and are rarely on exhibition. We have a pen of Silkies at the Experiment Station. These are excellent mothers for the non-sitting varieties. I know nothing of their qualities as table poultry. Their feathers are characterized by a downy appearance, and lack the usual web development which we recognize as feathers. They are unable to fly, and may be confined within very low fences.

In this class may also be placed the Creepers, a breed with

legs so short that they may only through courtesy be said to walk. They are kept, principally, as curiosities, and are little known in this country.

Barred Plymouth Rocks.

For a general-purpose breed perhaps none is superior to this one. They have good size, clean, bright yellow legs, are large bodied and produce an excellent quality of meat. They mature quite rapidly, and fatten quickly for market. They are good

BARRED PLYMOUTH ROCKS.
Cocks weigh 9½ lbs.
Hens weigh 7½ lbs.

layers, and hardy, vigorous birds. It is one of the very best of the American breeds. They are readily accustomed to any locality, whether hot or cold.

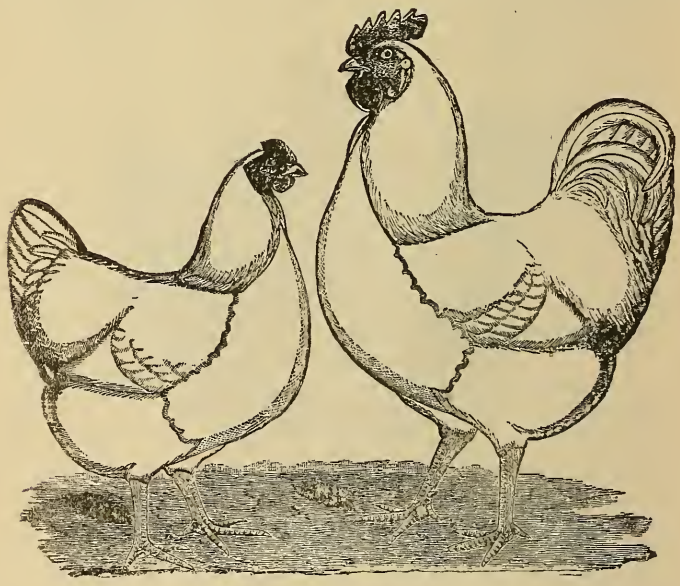
We have endeavored to secure the finest stock of Barred Plymouth Rocks obtainable, and have in our pen several prize-winning birds. Their markings are superb.

In disposition they are active and gentle, but bear confinement well. They are not high flyers, and while sufficiently active to find their own living upon the farm, they are not disposed to wander great distances from home. This is perhaps

the ideal general-purpose breed for this country. It is preeminently the fowl for the farmer and mechanic. In fact, probably the best for all who can keep only one breed.

White Plymouth Rocks.

This excellent breed of chickens had its origin in Maine, and on account of its intrinsic merits has become largely known throughout the whole country. They are of generous size, sym-



WHITE PLYMOUTH ROCKS.
Cocks weigh 9½ lbs.
Hens weigh 7½ lbs.

metrically formed, and have a beautiful yellow skin, beak and legs. This year our pen of White Plymouth Rocks proved to be among the best layers of any fowls kept at the Agricultural Experiment Station farm. The chicks are hardy, vigorous and very tenacious of life. We prize this bird as among the best on the farm. We think the most fastidious cannot fail to be pleased with them. They have most excellent constitutions, and do not readily yield to any of the poultry diseases.

BUFF PLYMOUTH ROCKS.
Cocks weigh 9 lbs.
Hens weigh 7½ lbs.

The Buff Plymouth Rock.

We consider this bird one of the most valuable acquistions to the poultry yard. Everything that is said of the Barred Plymouth Rock can be said with equal truth of the Buff Plymouth Rock. Perhaps however, no breed of chickens is better adapted to the production of early broilers than is the Buff Plymouth Rock. They are vigorous and healthy, develop rapidly, and their buff color obscures the pin feathers which are so objectionable in young chickens of other colors. They are, if possible, more vigorous than the Barred variety of the Plymouth Rocks, and we commend them most heartily to farmers as a general purpose bird worthy of much more extensive adoption in this country than they have received. Try them and you will like them I am quite sure. They are too excellent to disappoint you.

The Silver-Laced Wyandottes.

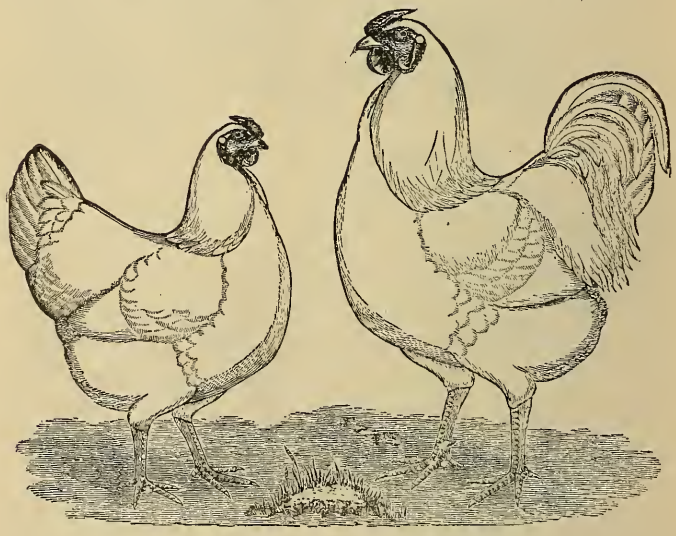
Among the general purpose fowls that have recently attracted the attention of breeders, few have been received with greater favor than have the Silver-Laced Wyandottes. Their friends claim for them superior qualities for the production of early broilers. They mature rapidly, and their clear yellow skin makes them desirable market fowls. In fact, few birds afford better qualities as market fowls than do the Wyandottes. They are moderate layers, have very attractive plumage, and their carriage is aristocratic and striking. Last spring when our Silver Laced Wyandotte had the run of a corner of the University Campus, I was much surprised and delighted at the attention they attracted even from people who ordinarily pay no attention to poultry. They are easily broken up when they become broody, but if allowed to sit are said to make excellent mothers.

SILVER LACED WYANDOTTES.
Cocks weigh 8½ lbs.
Hens weigh 6½ lbs.

White Wyandottes.

Recognizing the importance of the Wyandotte family of birds to the poultry industry of the country, we have also secured a pen of very choice White Wyandottes, which we think equal to any in the country. As layers they are excel-

lent and their rapid growth, pure white plumage, bright red faces, ear lobes and wattles, and their nice yellow legs, beak and skin, cause them to command the highest price in the choicest markest of the country. We have been extremely gratified during the past year at the laying qualities of this bird. In our hands it has done all that could be expected of it. The birds have been uniformly healthy and vigorous. They are well adapted to the farm or to broiler establisments.



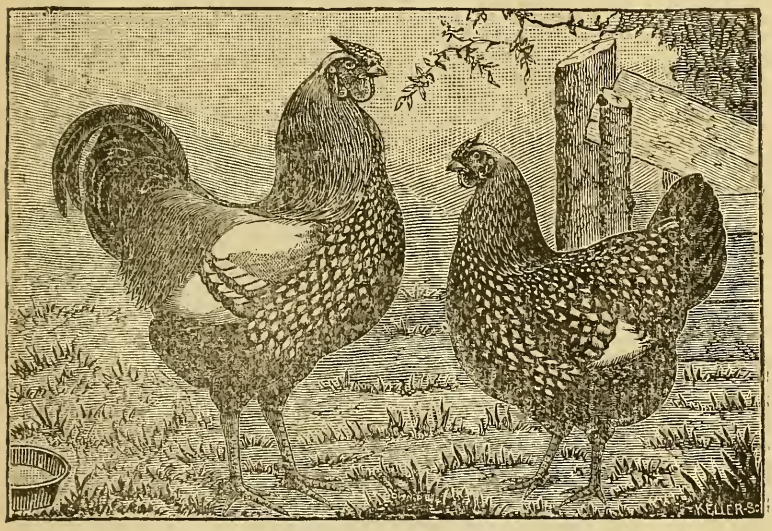
WHITE WYANDOTTES.
Cocks weigh 8½ lbs.
Hens weigh 6½ lbs.

Golden Wyandottes.

This is a breed of chickens of comparatively recent origin, but by their merits they have gained hosts of friends and are rapidly coming to the front as general purpose fowls. The gold lacing, rose comb, clean yellow legs and excellent carriage of the birds make them a breed that in our judgment will be largely sought after as they become known. In our hands they have been good egg-producers, have been very healthy and vigorous, and are one of the best general-purpose fowls on the Station farm.

The Rhode Island Reds.

The Rhode Island Red is a breed of chickens developed along the shores of Narragansett Bay, among farmers of that section, which has not yet been admitted to the American Standard, but is worthy of the attention of breeders on account of its excellent qualities. The crosses from which these fowls have originated are quite complicated, and are perhaps different in different sections, as the fowls are the result of the mingling



GOLDEN WYANDOTTES.
Cocks weigh 8½ lbs.
Hens weigh 6½ lbs.

probably of Brown Leghorn, Malay, Plymouth Rock, Wyandotte, Buff Cochin and Partridge Cochin, more or less crossed with the common Dunghill fowl.

The shape of the bird is not very different from that of the Plymouth Rock. It has yellow legs, which are generally free from feathers, though sometimes slightly feathered, and in plumage it ranges from buff to reddish buff, the males appearing much darker in color than the females. The comb is either

single or rose, the rose comb being perhaps the more preferable, but the single comb birds are the ones which have generally been exhibited. The skin is yellow.

There are two recognized breeds of chickens that seem to

RHODE ISLAND REDS.
Cocks weigh about 9 lbs
Hens weigh about 7 lbs.

have sprung from the Rhode Island Red, namely, the Buff Plymouth Rock and the Buff Wyandotte, or at least, to have been developed by similar processes. The tendency of the Rhode Island Red appears to be toward a buff color, and it is said to

be very easy to produce from a pen of Rhode Island Reds, fowls which will pass either for Buff Plymouth Rocks or Buff Wyandottes, according to their combs, and also by the infusion of Leghorn blood, to produce fowls which will pass as Buff Leghorns. It is said by H. S. Babcock, from whom I have received the most of the above facts, that this remarkable feat has been performed in the section of country where the Rhode Island Reds predominate.

In developing this breed we shall endeavor to so mate the birds as to fix the red color and secure a fowl as red as practicable, rather than buff.

As a table fowl and as a producer of eggs, the Rhode Island Red has much to commend it. In fact, it is one of the most satisfactory breeds of chickens we have on the Agricultural Experiment station grounds. It is of good size and presents a handsome appearance when dressed.

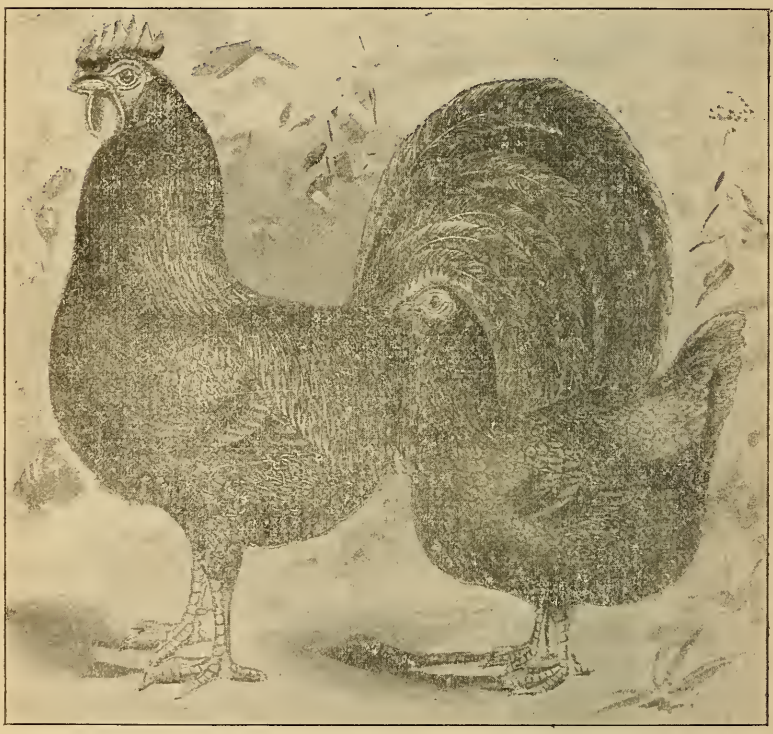
The American Black Wonders.

This is a new breed of chickens, orignated by H. G. McDowell of Canton, Stark County, Ohio. They have not been admitted to the American standard as yet, and we have secured a pen of them in order to test their merits. This new breed is stated by the originator to be the result of continued effort to perfect a breed in all points to suit the fancy of the breeder. The effort of the originator has been to overcome as many objections apparent in other birds, as possible, and to combine hardiness, market purposes and egg-producing properties, together with early maturity, great vitality and lasting vigor.

He states that "the plumage is solid black, the outward tinge greenish black, and quite glossy; inside, next to the skin, white and very downy; skin, very yellow; scales of legs and bill, yellow. Both single and rose combs appear; and it has white ear lobes, short legs, heavy thighs, deep body and wide, short, flat back. It has also a closely knit frame with no feathers on the legs, nor surplers head weight and is a large and stylish bird. He seems to have combined many of the most desirable

qualities of the best, pure breeds of chickens. Pullets lay at four and five months old; hens lay the year round."

The hens weigh when full grown about 8 lbs., and cock about 10lbs. The cockerels on the farm weigh about 7 lbs when five months old, and they are very healthy and vigorous. The hens

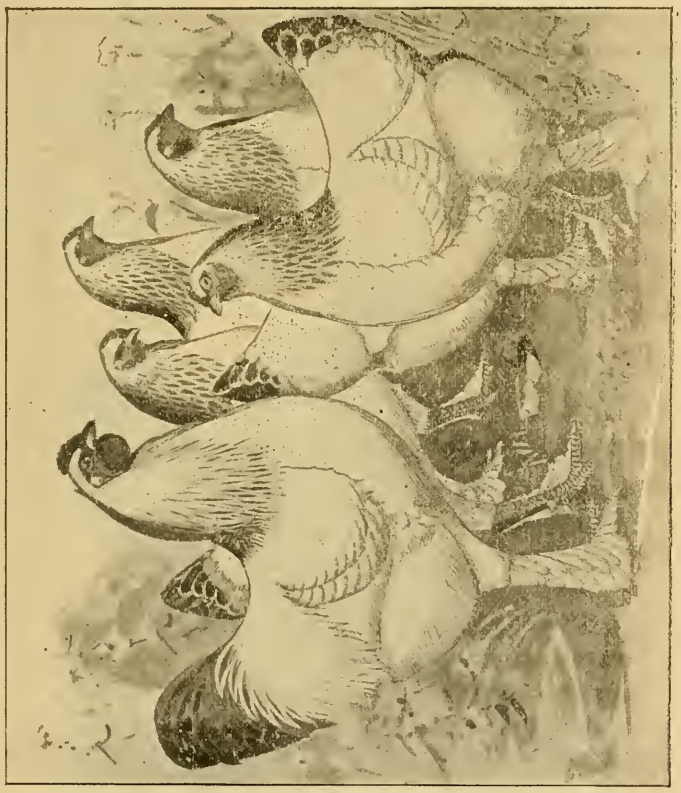


BLACK JAVA.
Cock weighs 9½ lbs.
Hen weighs 7½ lbs.

are said to be good brooders but none of them set for us this year. Our pen, bought of the originator, laid quite well but the birds are verp shy and nervous, and varies a little in discription from the above. Their quailties remain to be tested.

Black Javas.

The Black Javas are an American breed of chickens possessing the very best table qualities. The breast is deep and full, the body long, broad and deep and just the right shape to put on flesh where it is most needed. The shape of the Java is very symmetrical. They have excellent constitutions, and in point of vigor and vitality are excelled by few if any fowls. They resist attacks of disease of every kind with great persistency. They seem to be well adapted to close quarters, and taking them all in all are much to be admired. We commend them to farmers as general purpose fowls.

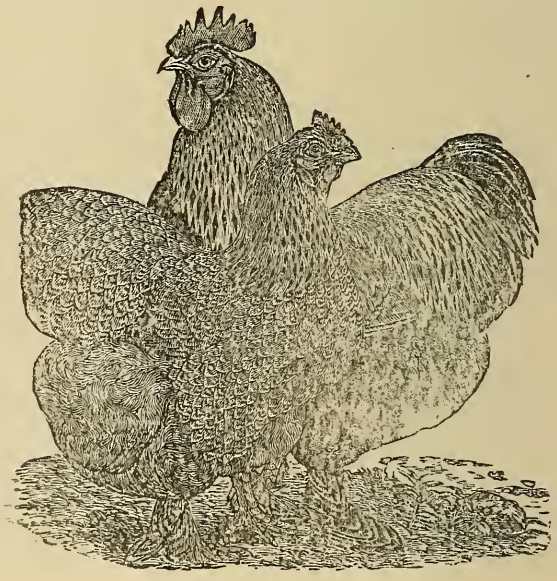


LIGHT BRAHMAS.
Cock weighs 12 lbs
Hen weighs 9½ lbs.

Light Brahmas

For the past thirty years no breed of poultry has sustained itself so uniformly over the country, and been more admired by fanciers, than have the Light Brahmas. They are admirably adapted both to villages and farms, owing to their quiet habits and the ease with which they may be kept in inclosures. If, however, they have the range of the farm, they avail themselves of it. There are few more beautiful sights than a nice flock of Light Brahmas, seeking food in a green pasture field. We think they mature to slowly to be adapted for early broilers, but they have the reputation of being excellent winter layers and producing excellent poultry for the market. A good hen under favorable conditions, will lay about 150 fine flavored eggs a year, and in addition rear a nice brood of chickens, and, if they are properly housed, about 100 of the eggs will be laid between December and June.

They require heavy feeding and delight to eat out of the hand or basket, and will become extremely gentle with a little care.



PARTRIDGE COCHINS.
Cock weighs 11 lbs.
Hen weighs 8½ lbs.

Partridge Cochins.

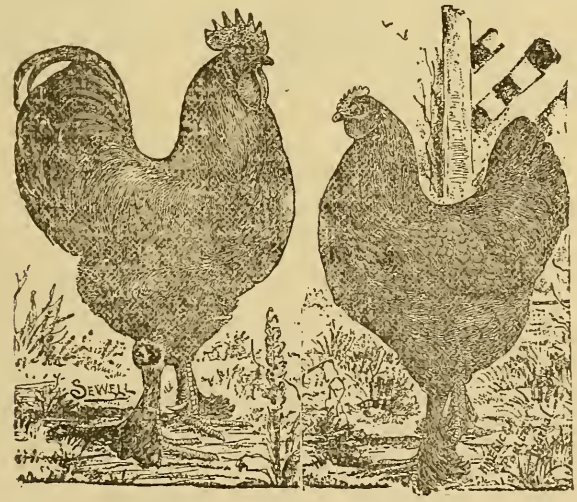
One of the most popular of the Asiatic breeds of chickens is the Partridge Cochin. They breed very uniformly in feather and form, and their heavy feathers admirably adapt them to the cold climates. They have no large combs or wattles to get frost-bitten in severe weather. They are vigorous and healthy and not subject to ordinary poultry ailments.

Their movements are slow and clumsy and they are contented to remain inside of a very low enclosure. In fact, they can scarcely fly over a fence three feet high. There dispositions are gentle, and they bear confinement well.

They are not extra layers but begin early and lay well in winter, so that their eggs come at a time when they command the highest prices. They become broody early, and for that reason are well adapted for hatching early chickens. They make most excellent and reliable mothers.

We cheerfully recommend them to farmers or mechanics requiring fowls with these peculiarities, and also to families in town with limited yards in which to keep poultry.

At the Experiment Station we shall use this breed as mothers for non sitting varieties, and for raising early stock.



BLACK LANGSHANS.
Cock weighs 10 lbs.
Hen weighs 7 lbs.

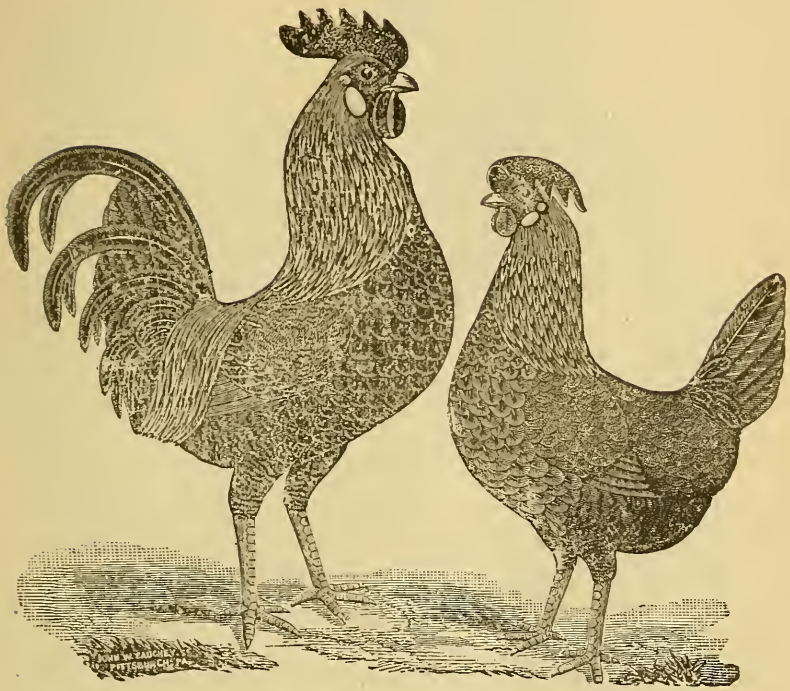
Black Langshans.

This is one of the favorite Asiatic breeds, eminently adapted for general purposes. They are natives of China and have rapidly gained in public favor, both as market fowls and good egg producers. They are very hardy being natives of a cold climate. They are much more active than most other Asiatic fowls and are better foragers, thus being well adapted to find their living upon the farm. They are of large size, having white flesh and skin and excellent flavored meat, and make choice table fowls. The pullets commence to lay when quite young and make good winter layers. The eggs are mostly dark colored, though not strictly of one color. The birds are very large and well built. The cocks have a very aristocratic bearing and greenssh-black plumage which gives them a striking appearance. The hens are excellent mothers, and are very tame and gentle, but they are not persistent sitters.

It is a breed of fowls that we would like to see receive more attention than it does at the hands of our farmers. We are quite confident that if they were to give it a trial they would be so well pleased with it that it would soon become one of the famous breeds of the state.

Single Comb Brown Leghorns.

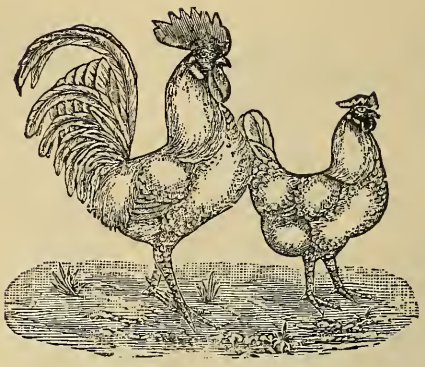
The Single Comb Brown Leghorn breed belongs to the Mediterranean class and is recognized as one of the best egg-producing varieties of fowls in this country. They belong to the non-sitting class, and lay a very large number of medium size, white eggs, of especially fine flavor. Where the object is to produce eggs for the market, perhaps no variety will be found to exceed the Single Comb Brown Leghorns for egg producing capacity. They are nervous and active foragers, and will search the farm over for choice food. Perhaps no breed of chickens is better able to take care of itself than they are and where fowls can have the run of a farm, perhaps no better variety can be found. It is pre-eminently an egg-producing breed. Their meat is very tender, sweet, juicy and fine grained, but their



SINGLE COMB BROWN LEGHORN.
Cock weighs about 6 lbs.
Hen weighs about 4 lbs.

bodies are small so that they are not so well suited for table use as larger and heavier varieties.

Our pen of Brown Leghorns are vigorous fowls, very free from usual poultry diseases and have proven to be regular egg producing machines. A Leghorn hen will lay over 200 eggs a year. A farmer provided with a hundred and fifty well fed and properly cared for Leghorn hens will be surprised at the income they will bring him.



SINGLE COMB WHITE LEGHORNS.
Cock weighs about 6 lbs.
Hen weighs about 4 lbs.

Single Comb White Leghorns.

The Single Comb White Leghorn breed is, in general make-up, the same as the Brown variety, except in color. They are pure white. They are non-sitters, lay a large number of excellent, white eggs of medium size and superior flavor. The White Leghorn eggs have proved more fertile than any variety with which we have experimented. The chicks are quite hardy mature very early and the pullets begin laying when about four or five months old. Our White Leghorns have borne confinement well, although when left to roam at will they are excellent foragers. They have a beautiful yellow skin, and we consider them one of the handsomest chickens on the farm We are so well pleased with this variety of fowls that we expect to raise large numbers of them upon the farm for future use, and we recommend them heartly to farmers wishing a vigouous, healthy, profitable fowl.

Blue Andalusians.

This is a breed of fowls which appears originally to have been imported into England from Andalusia, Spain, about fifty years ago, and on account of their excellent qualities they have received considerable attention in England and in this country.

BLUE ANDALUSIAN.
Cocks weigh about 8 lbs.
Hens weigh about 6½ lbs.

They belong to thenon-sitting class, and as layers they have no superiors. Under proper care they will lay the whole year round, both summer and winter. The eggs are white and medium size. The chicks are very healthy, grow very rapidly and the breed is well adapted for crossing wi h other varieties.

where it is desirable to produce early broilers. They feather quickly and present a very fine appearance at an early age. The pullets begin laying when about four months old. The fowls present a stylish appearance. They have large red combs, red wattles and face and white ear lobes. The principal objection to them from the fancier's standpoint is that they do not breed true to color, as most other varieties do. This is a characteristic of the breed which has never been overcome, and while one can guarantee the purity of his eggs and the uniformity and high class of his fowls, he can never be sure that the eggs will hatch chicks of uniform color. In fact, we are quite certain that there may be a number of off-color chicks in every setting. Notwithstanding this, the breed has so many excellent qualities that we can commend it to the favorable consideration of farmers and others.

BLACK MINORCAS.
Cocks weigh 8 lbs.
Hens weigh 6½ lbs.

Black Minorcas.

The Black Minorca breed belongs to the Mediterranean class of non-sitters, of which they are the largest. They combine beauty and utility and are favorites of the fancier and popular with the public, as they are among the best egg-producers

SINGLE COMB WHITE MINORCAS.
Cocks weigh 8 lbs.
Hens weigh 6½ lbs.

known. Their eggs average about one pound and fourteen ounces to the dozen, and some breeders of the Black Minorca are anxious to establish the custom of selling the eggs by weight instead of by the dozen.

They are active fowls and they love to range over an extended area, being abundantly able to provide their own food

if given the opportunity. They are less nervous than the Leghorns, and if carefully handled become very tame and bear confinement well.

The chicks are hardy and easily reared, and lay when four or five month old. The Black Minorcas are good winter layers and we commend the breed to persons who wish excellent winter layers, and vigorous healthy stock. They do not appear to be damaged by breeding for fancy points like some others. We are great admirers of this breed, and expect to raise a large number of them upon the College farm.

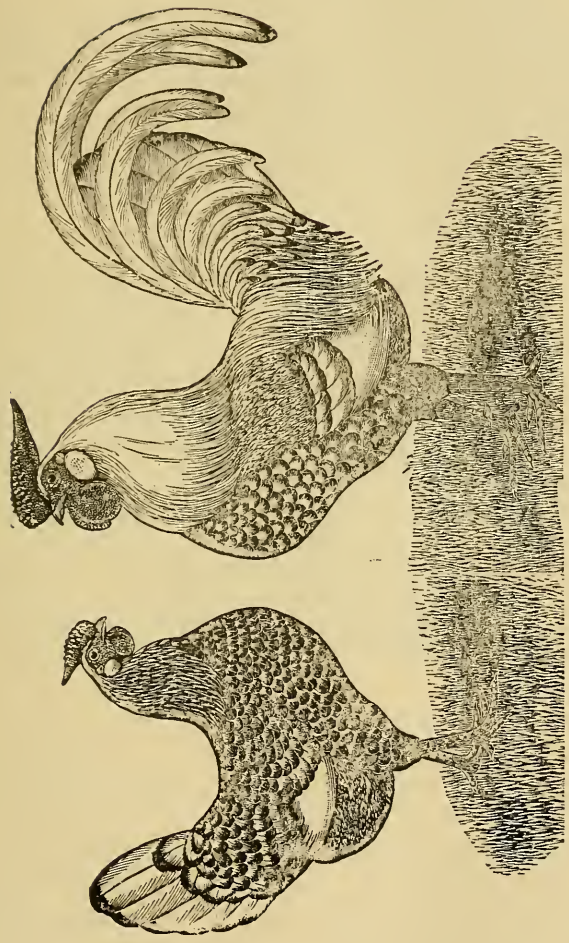
White Minorcas

This is a breed of chickens closely resembling the Black Minorcas except in color. They are non-sittters and produce a large number of good sized eggs. There is perhaps no difference in the laying qualities of the Minorcas varieties. They are very hardy, early matured, and the pullets lay when very young. The White Minorcas is perhaps a trifle smaller than the Black.

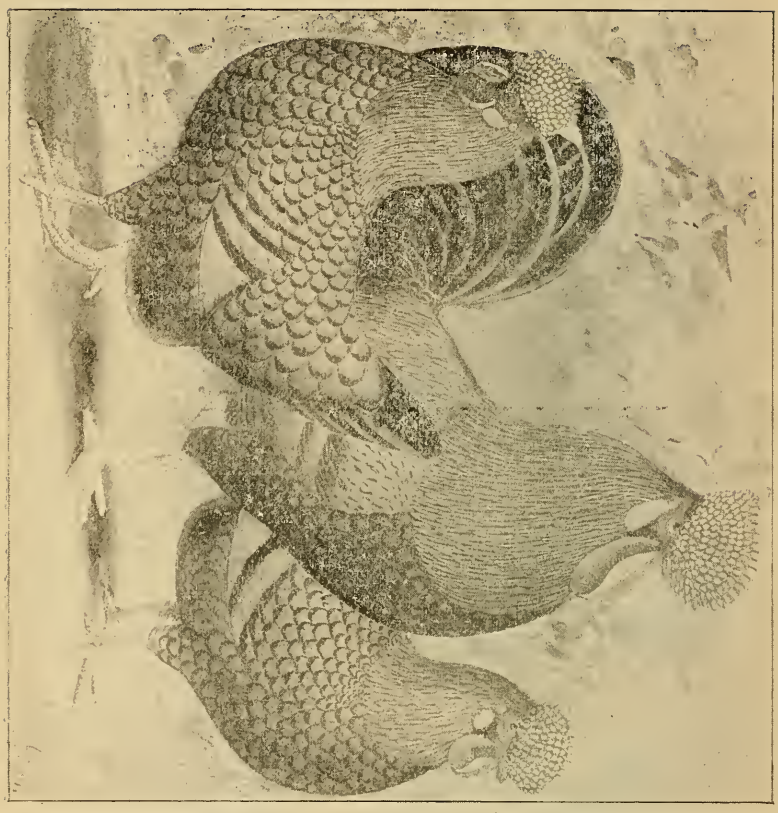
Silver Spangled Hamburgs.

This is undoubtedly one of the most beautiful varieties of fowls bred in this country, and an ornament to any yard or any farm. Besides their beautiful appearance they are one of the greatest egg-producing breeds ever introduced into the country. They are non-sitters, and have very justly been called "everlasting layers."

Hamburgs are nervous, active fowls, and they do best with a considerable area to roam over, though they bear confinement well. They are high flyers, and are better adapted to the to the farm than the village. Their bodies are to small to be favorites for table or market, but for persons who wish to raise poultry for eggs, few breeds will give better satisfaction than Silver Spangled Hamburgs.



SILVER SPANGLED HAMBURGS.
Cocks weigh about 5½ lbs.
Hens weigh about 3½ lbs.



RED CAPS.
Cocks weigh about 7½ lbs.
Hens weigh about 6½ lbs.

Red Caps.

The Red Cap belongs to the Hamburg class and appears to be a breed of chickens developed in England. At least they were imported from England into this country. For egg production they are considered superior to the Leghorn family. They have larger bodies with beautiful white, deliciously flavored flesh. They are non-sitters. They bear confinement well, and are a breed of chickens whose popularity, in our judgment, will very largely increase in the future. The plumage of the hen is nut

brown, each feather ending in a black spangle. The cocks are black on the breast, but on the back and wing coverts and saddle they are mahogany red. Their immense combs covered with little red protuberances, never fail to attract attention.

The Houdans

The Houdan breed of fowls was introduced from France, and is one of the most choice varieties for villages or thickly settled communities. They are crested and for that reason are unable to see a hawk or other enemy approaching them from above. For this reason they are not well suited for sections of the country infested by such pests.

It is a very old breed, and it is not known who the originator was, but since being imported into this country it has won many friends on account of its excellent qualities. The fowls are extremely tame and docile, though sprightly, will not roam away, are not high flyers, and make fine pets, being well adapted for small runs. They are hardy and thrive well under ordinary care.

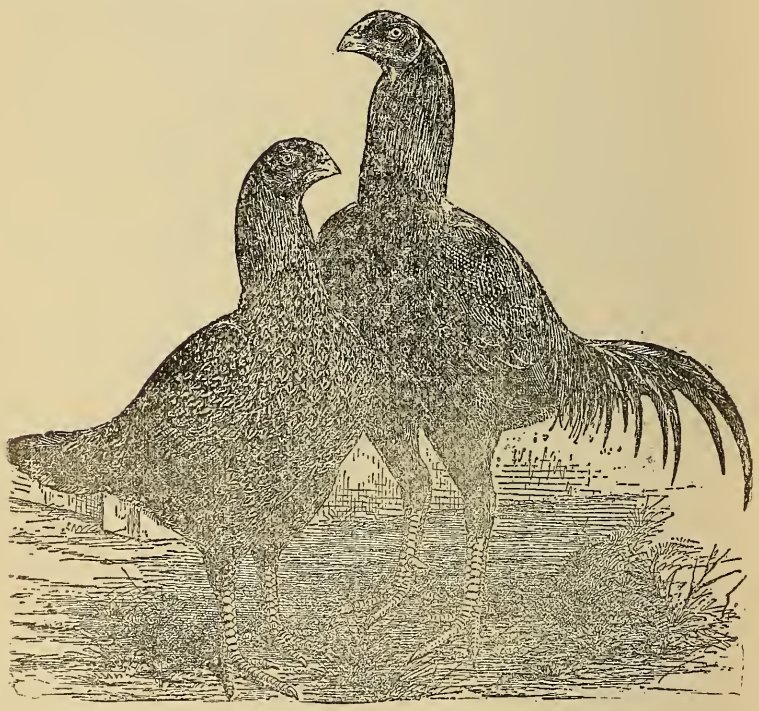
They have five toes, crests and beards are dark colored with white spots, and the shape of the body is much like that of the Dorking. They are considered valuable as table fowls, the meat being tender, juicy and fine flavored. They belong to the non-sitting varieties.

The Houdan hen is a good layer and produces large white eggs which are generally fertile and of choice flavor. The cocks weigh about 7 lbs., and the hens about 6 lbs. From the short experience we have had with them upon the Experiment Station grounds, we are very highly impressed with their excellent qualities. We commend them to people living in thickly settled sections and believe they will be pleased with them. Ours are so gentle that we can pick them up almost any time in the open yard.

The Silver Gray Dorkings.

The Silver Gray Dorkings is an English breed of fowl, imported into this country, and much prized in England on account of its table qualities. It is a large sized bird, of rapid

growth and early maturity. The cocks in full maturity weigh from 9 to 10 lbs. and the hens from 7 to 8. They are gentle in disposition, and ours enjoy being petted almost as much as a cat or dog does. They are good layers and lay most of their eggs between February and September. Their chief value, however, is their table qualities. They are of the five-toed variety. The breed is not very common in this section of the country, but we believe that as its qualities are better known it will be more highly appreciated.



CORNISH INDIAN GAMES.
Cocks weigh 10 to 12 lbs.
Hens weigh 8 to 11 lbs.

Indian Games.

Indian Games are rapidly gaining public favor. They are a general purpose fowl, but are better adapted for the production

of meat than eggs. The meat is of superior quality, excellent flavor, and the fowls mature very early. They are eminently adapted for the production of early broilers. Their breasts are very full, the feathers lie close to the body, and the bird has a very powerful appearance, and is really one of the heaviest birds produced upon the farm. The face, wattles and comb are bright red. They are very active, sprightly and vigorous, and have a commanding and courageous carriage, with the back sloping down towards the tail. The chicks are hardy and easily raised. They are not fighters as some people suppose, but are among the most peaceable and gentle birds that we have. They readily become pets and can easily be taught to eat out of the hand or to come to a person in the yard, and they enjoy being petted. The hens are good sitters and make the best of mothers. We have often noticed them, at the approach of a storm, gather their broods together and go to a shelter and carefully hover them, while the hens of other breeds would permit their chicks to get wet and thoroughly chilled before hovering them.

The Indiam Game mothers hatched more eggs and raised more chicks than any other breed upon the farm, and we shall in future employ them quite largely there for this purpose. I cheerfully commend them to persons wishing an excellent breed of chickens. Care must, however, be exercised to keep them in clean houses, as they are more susceptible to roup or diphtheria than any breed with which we are acquainted.

Black-Breasted Red Games.

This is a breed of chickens worthy of much more general cultivation as a fowl for practical purposes than has been generally believed, owing to the fact that in the past they have been largely considered as adapted only for use in the pit. The only objection there is to them is the quarrelsome disposition of the male bird. This may be largely overcome by allowing the cocks a day of liberty alternately. They are so quarrelsome that two cocks cannot safely be free in the flock at the same time. The hen makes a most excellent mother. They are excellent layers of delicious eggs, and make a most superb table

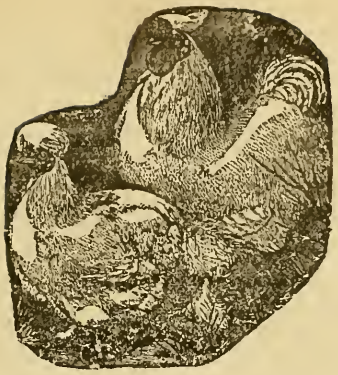
fowl, their flesh being unequaled on account of the richness of of its flavor. Where farmers are troubled with hawks, we commend to their favorable consideration this breed of chickens; and believe that after a hawk has had an encounter with a vigorous cock of this breed his visits to the poultry yard will be few and far between.

The average weight of the Game cock is about six pounds; of the hen, about five pounds.

GOLDEN SEABRIGHT BANTAMS.
Cocks weigh 26 oz.
Hens weigh 22 oz.

Golden Seabright Bantams.

These little beauties are fine examples of both the useful and truly fancy fowl. They make great pets and are usually loved by children. They love to be handled, and the cock will sit on one's hand and crow. Their carriage is very upright and strutting and they soon become favorites in the poultry yard. They are excellent layers of small eggs, good sitters, good mothers and are easily reared. They are very hardy, and though small, are excellent eating. They are commended to persons who have a sense of the æsthetical and wish everything about them neat and beautiful.



SILKIES.

Silkies.

The Silkies are a curious breed of birds having a peculiar plumage which is webless, soft, silky and pure white. They have a small crest, the comb is small, of a rose form and has a lumpy appearance and is of a dark purplish color. The legs are stout and furnished with a silky fluff which descends below the hocks. The shanks are feathered on the outside with silky plumage and are of a dark leaden or blue color. They have five toes, the outer one being feathered. The face is deep purple as is also the skin. We are not acquainted with the table qualities of this fowl as our pen of birds was imported from France and none of them have yet been killed by us. They are fairly good layers, are extremely gentle in disposition, are incapable of flight, and are contented to remain within a very narrow inclosure. The eggs are small but of good flavor. They make most excellent mothers, but as the birds are small they do not seem to be capable of incubating more than about eight eggs at a time. They are interesting curiosities which never fail to attract attention, and we shall use them as mothers for the non-sitting varieties.

FEEDING CHICKENS.

This may be divided into two periods. First, the feeding of young chicks; second, the feeding of grown fowls. The careful poultryman knows perfectly well the necessity of using the utmost care in feeding young chicks. Nothing should be given them for the first twenty four hours after they are hatched, and they should be permitted to remain under the hen or in the brooder until they manifest hunger by moving around and picking at any small object that may attract their attention. They will usualy show this development of appetite when they are about 24 to 30 hours old.

We consider the best food that they can have to be baked corn bread made up with butttermilk and a little soda with a little egg stirred into the meal while mixing It should be baked so that it will crumble readily between the fingers. The finely crumbled bread should be caused to drop in front of the chickens where it will attract their attention, if the chickens have been hatched in the incubator. If they have been hatched by a hen, as soon as you put food in reach of her, if she is a good mother, she will break it up in small pieces, call the brood around her and teach them to eat it.

Another very excellent material for feeding young chicks is stale bread soaked in milk and the milk squeezed out until the bread is comparatively dry. Also hard boiled egg chopped up and mixed with oat or corn meal to a granular condition is very excellent. This kind of feed can be continued for the first week after hatching, and care should be used not to permit an excess of the food to accumulate in the brooder or in the coop. What the chicks will eat up clean is the proper amount.

The second week the food can be varied by giving them some cracked wheat or cracked corn. If it can be arranged so that they will not have enough to eat without being compelled to scratch after it in the brooder yard, so much the better. After the first week, a hen with a brood of chickens should be per-

mitted to have a small run or yard in which to exercise and keep her chickens in motion.

Fine grit from crushed rock or oyster-shell should always be kept in easy reach of the growing chicks. It is surprising how much of this material they will use, and frequently chicks suffer from the lack of grit which serves the purpose of teeth for them.

Young chicks, whether raised in a brooder or by a hen, should be encouraged to search for their food by scratching, and after they are two weeks old a moderate amount of ground raw bone, or of fine chipped meat will be highly relished by them, but care should be observed not to give them enough to produce bowel troubles which are likely to be very fatal to young chicks. It is also well to mix with their food every day or two fine chopped vegetables, such as lettuce, onions, chipped cabbage, sliced and cooked turnip, etc. In fact, the greater the diversity of food the young chicks can have, and the larger the amount of exercise they are compelled to take in getting it, the better their health is likely to be and the more rapidly they will grow.

FEEDING GROWN FOWLS.

In feeding grown chickens two objects are in view; first the development of the fowl, and second, the development of the egg. No one need expect to have nice chickens without providing them an ample supply of diversified, wholesome food which they should be made to scratch for as vigorously as possible.

It is necessary that the poultry raiser should not only supply his chickens with a sufficiency of food to maintain them in prime condition, but it should be supplied in proper variety to enable them to digest it and appropriate it to the uses of the animal system as easily and profitably as possible. Chickens will undoubtly always be healthier if they can have a large run or pasture lot where they can find an ample supply of green food in the form of fresh clover or grass. Anyone observing

a flock of chickens feeding in a field will be surprised at the quantity of green stuff a chicken eats. Where this cannot be provided by a natural growth, the chickens should have an ample supply of fine cut green food provided for them every day or two. Grown fowls should be fed twice a day, as early in the morning and late in the evening as can be done. The morning feed may consist of a mash of cornmeal, wheat brand and midlings, mixed in the proportion of two parts of meal, one of brand and one of middlings. This can be stirred the evening before into hot skimmed milk or into boiling water to which a teaspoonful of salt has been added to the gallon of water. This may be stirred up with fine cut clover or other green stuff until the mass is throughly mixed, and the chickens should have as much of this mixture in the morning as they will eat up clean, no more. There should be scattered in chaff or straw, where it is difficult to find a sufficiency of wheat, oats and other grain so that they will have to scratch considerably during the day in order to find it, the object being to force them to exercise as much as possible in getting their food. At night it is a good idea to give the chickens a liberal supply of ground green bones with scraps of meat and a moderate supply of cracked corn, wheat or other grain. If feeding for eggs be careful not to feed an excess of corn or corn meal. It is too fattening. Other grains are better for the production of eggs. It is best never to give the chickens as much fresh bone as they will eat. A cabbage head or a beet hung up so that the chickens will have to jump to pick it, affords excellent amusement and proves a lvantageous in the chicken yard.

The slops of the kitchen and sour milk or butter-milk of the dairy mixed with corn meal or middlings and stirred up as not to be sloppy, form excellent foods for chickens. In fact, the wastes of the kitchen mixed with little corn meal or middlings may be thoroughly utilized by the farmer. We are not discussing the scientific feeling of chickens in the present consideration of the subject. The larger the range chickens have of course the less food they require, but the farmer will always find it economic to feed his chickens, young or old, regularly

and sufficiently. Be sure there is always within reach an abundant supply of crushed oyster-shells or other grit.

The quantity of food varies with the different breeds of chickens, and can be determined by a little observation and experience. The man who expects to do much with poultry should make it a point to have green clover, green oats, green fodder-corn, or other green products of the farm that may be cut into small pieces and fed to the chickens. It is an excellent way of utilizing apples, small potatoes, turnips, pumpkins, beets, cabbages, onions, and in fact almost every product of the farm or garden. A chicken eats almost everything, if it is properly prepared for it. It is a good idea to use a liberal supply of cayenne pepper and a moderate amount of salt in the preparation of feed stuff for chickens. In the spring of the year a good feed of raw bone and meat to a pen of chickens will frequently start them to laying when nothing else, apparently, will.

Much of the profit in the poultry business depends upon the skill of the poultryman in feeding his stock. When feeding for eggs the poultryman must remember that the hen that is too fat or too lean will not produce eggs profitably. In feeding for broilers or roasters for slaughter, the most stimulating and fattening foods that are economic and available, should be utilized.

CARE OF YOUNG CHICKS.

If young chickens are kept in an enclosure where there are older chickens, provision should be made so that they can run into a coop, or under a lattice work which will prevent the older chickens from robbing them of their food or injuring them. The form of coop that we have found best for our brood hens is a flour barrel laid down on its side, and so staked that it cannot roll back and forth. The hen and her brood are put in it at night and a loose cover put up in front to keep the chickens shut in, in the morning, and keep vermin out. They have the run of the yard in the day time. This is proving a most excellent means of protecting the hens from rainy

weather and from chilling blasts. This is much better than the ordinary coops recommended for hens with their broods, as the hen is thoroughly protected from storms and outside of danger. It is well to spray the barrel thoroughly either with petroleum emulsion or with crude petroleum in order to kill the lice, and also to whitewash the barrel inside before putting the hen and her brood in it. The barrel should be cleaned once or twice a week and dusted inside with air slacked lime. These barrels can usually be had in quantities for less than we can make the ordinary coops. Precaution, however, should also be used to clean coops or change their location, so that the hen will have a fresh place every few days for the coop. A coop if without a board bottom, should be placed upon dry ground high enough to prevent rains from overflowing it, and it should be tight enough to keep the hen from being exposed to drafts.

In the case of chickens raised in the brooder, our experience has demonstrated that a circular brooder is the most satisfactory form. This prevents the chickens from crowding together in a corner and smothering each other, as they are liable to do in square or oblong brooders. On one occasion the last summer, we lost a dozen fine chicks, due to this tendency of the chicks to crowd together whenever they get chilled. In the morning the weather was so warm that it was considered advisable to put out the lamp in the brooder. By noon an unexpected and sudden change in the atmosphere caused the chicks to crowd together in one corner of the brooder in the hope of getting warm, and in this way a number of them were smothered. We have had similar accidents to happen on several occasions where brooders of that shape were used. They do not happen in a brooder of circular form for the reason that there is no point at which the chicks can crowd together in sufficient numbers to cause suffocation. The most of the brooders in the market are not satisfactory, and we advise every one who raises chickens by incubators to consider carefully the question of proper brooders before making investments. We think the brooder should be circular. The light should be admitted from above; not from the sides, or ends, if it is necessary to use another form of brooder.

"FEEDING IN A NUTSHELL."*

1. "The hen, like the cow, must be given bulky food. Give her all the chopped clover, scalded, that she can eat. If she is fat, the clover, with one ounce of clean meat per day, will soon *compel* her to lay."

2. "Separate the layers from the others. You cannot keep old hens, pullets, fat hens, and lean hens together any more than you can keep dry cows, heifers not yet in milk, and fresh cows together, for they do not require the same food."

3. "Grain is deficient in lime and mineral matter, but bran is rich in nitrogen, carbon and mineral matter."

4. "Beans and peas, cooked, and thickened with bran, and fed twice a week, is excellent food for laying hens."

5. "Linseed and cotton seed (cake or meal) is excellent, but all oily foods are liable to cause moulting. Use with care."

6. "The best food for laying hens is clover, finely chopped and scalded. A bucket of chopped clover, seasoned with bran, middlings, linseed meal, or oatmeal, (changing the substances so as to afford variety) with beans twice a week, and meat or ground fish, will furnish more nitrogen for eggs than the hen can utilize."

7. "The *secret* of feeding is to avoid getting your laying hens fat."

8. "Always keep your hens *at work*. An idle hen is never a good layer."

9. "Breed is everything. The machine for converting food into eggs must be of the best to be had. Anything and everything will not do."

10. "Good warm shelter saves food, and the better it is the cheaper, and the lower its cost."

11. "Do not compel a few good hens to support the others. Kill the drones."

12. "Do not waste time trying to cure egg-bound hens, or persistent cases of roup. The labor will be worth more than the hen."

13. "You cannot go into the poultry business and trust to "A

*Poultry Keeper, Special No. 2, p. 100.

Man" at $15 a month. You must do the work yourself. The man may upset your boat."

14. "You can't produce eggs and lice at the same time one business is entirely separate from the other."

15. "How much to feed a dozen hens per day depends on how much the boss hens grab from the timid ones."

16. "Leghorns and Brahmas cannot thrive together. Have your flocks uniform. When you send to a breeder for eggs of pure breeds remember that in that case "eggs are not eggs." It is the *stock* you seek, not eggs particularly. You can get *eggs* at home, but not *stock* of the kind you wish.

17. One-half the people throw down grain, or fill feed hoppers, because it is an easy way to feed, but they do not get any eggs.

18. Kick away the feed hopper. Never keep food before the hens continually.

19. Condition powders cannot assist a hen to get something out of nothing. If the albumen is not in a large amount of food it will not be found in a teaspoonful of condition powders, but condition powders may be excellent for invigorating debilitated hen.

20. When your birds have bowel disease change the food for a day or two, and change the grit. One-half the troubles are from lack of *sharp*, hard grit.

21. If your hens "pip," or have swelled heads or eyes there is a crack or hole in the wall. Usually the draughts from some ventilator are the cause, and the surest remedy is to keep the house close at night, but it must be kept clean and neat.

22. A farmer will get up at four o'clock, clean out the stalls, feed, milk, ship his milk daily (and Sunday, too,) make up the beds, milk and feed again, with a bare profit, if he has a dairy herd, but it is hard work to even clean out a poultry house once a week.

23. Give warm water, three times a day, in winter. It is invigorating, and is superior to tonics.

24. They are no non-sitters. A hen can be made to lay only a few eggs before beginning to incubate, or she can be made to

lay right on until her moulting period. This has been *demonstrated* by experiment with Leghorns and Brahams, by regulating the food. A fat hen will sit.

25. There is no difference, *in any respect*, between chicks hatched under hens and those hatched in incubators. If there should be a difference it will be due to the kind of food and management. All that the incubator does is to get the chick out of the shell. A hen will do the same thing for a duckling, but the duckling does not become a chick.

26. Feathers on the legs, very large combs and wattles, and heavy crests, do not add anything to egg production, and can be dispensed with.

27. A yellow leg and skin does not indicate quality. The best table fowls (Games, Dorkings, Houdans, and Langshans) do not have yellow legs.

28. One ounce of meat a day for one hen is the estimate, but of course, as hens differ, much depends on the kind of hen. No two hens are alike.

29. From three to four ounces of grain per day is considered an allowance.

30. Five pecks of corn, or its equivalent, is claimed to be an allowance for a hen one year.

31. When hens lay nearly every day they require heavy feeding; more grain and meat, and less clover being required. Feed as heavily as possible to active, laying hens, but be careful not to get your hens too fat.

32. A good laying hen is always at work.

33. Make nests in a warm place in winter and in a cool place in summer.

34. When hens droop, have leg weakness and gradually become weaker, the difficulty is due to injury of the spine, caused by the male. Remove him from the flock.

35. It is the large grey louse on the heads and necks that cause hens and chicks to have the "sleepy" disease.

36. A Leghorn will thrive on corn when a Brahma will not, because the Leghorn is more active, and works off the surplus carbon.

THE MARKETING OF POULTRY.

In this State there are three systems in practice: One the huckster system, in which the huckster calls at the farmer's home and buys whatever poultry he may have for sale, either in the form of live poultry or dressed. Most generally, however, the farmer sells it as live poultry, and the huckster disposes of it in the local markets. Another manner of selling it is to dress the poultry and ship it to commission merchants, generally in the east. In such cases it is necessary for the poultryman to study carefully the markets, and to carefully kill, dress and pack the chickens, so that they will arrive at the market in a condition favorable for meeting the demands of the particular market. The choicest market for our chickens is the New York market. Particular classes of chickens will also find ready market in Philadelphia and Baltimore. All of these markets require poultry to be dressed in a particular manner, in order to meet their demands. Washington City market it is said is a dumping ground for all kinds of poultry that cannot be sold at other markets. If a chicken is too poor or too old to go to the other markets, poultrymen can generally sell it in the Washington City market. Not that there is not a demand for choice poultry in that market, but there appears to be a demand for second or third class poultry.

It is rarely the case that our local markets are fully supplied with poultry. There is always a good demand for poultry and eggs in the local market.

Dressed poultry for local markets has its head, feet and entrails removed. Dressed poultry shipped to eastern markets does not generally have these removed. In dressing chickens for the eastern market they should be slaughtered by hanging them up by their feet over a box or barrel about as high as the breast of the operator, so that it will not be necessary to bend over while picking them. About a two-pound weight with a wire attached and a hook on the upper end so that it may readily be fastened to the chicken's beak or head, is considered by some pickers as advantageous in holding the chicken steady

while it is in its death struggles and while it is being picked. The manner of slaughtering is as follows: After the chicken has been suspended as described, by the legs, open its beak and with a sharp knife make a cross section at the base of the brain inside of the mouth. Then turn the knife-blade and make a deep cut in the roof of the mouth into the brain, then catching both wings in one hand close to the body of the chicken, and with the other hand, which should be the right, catch the feathers on the back. The chicken in its death struggles is wholly insensible to the pain that would ordinarily be felt in plucking the feathers from it. The nervous system is relaxed, and a skilful picker will take all of the feathers off of the chicken by the time it ceases to struggle. They should all be removed with expedition, while the nervous system of the chickens is entirely relaxed. With practice, in this way all of the feathers on a chicken can be removed in one minute or less time. As soon as the feathers are all off of the body, pull the quill-feathers from the wings and tail. If young chickens are being slaughtered, the pin feathers should all be carefully removed, (usually by an assistant,) the head and feet carefully cleaned of any blood and dirt that may be clinging to them, and the chickens placed in the refrigerator or a cold room to cool them before packing for shipment.

Chickens that are to be slaughtered should not have any feed for 36 hours before. This leaves the crop and alimentary canal free from food. If the crop contains food it is liable to become discolored, the food becomes sour, and thus damages the market value of the bird.

No hot water should be used in dressing chickens, nor should any effort be made to free its body of pin feathers or down by holding it over a flame, as is frequently practiced by farmers who hope thereby to make their poultry have a more presentable appearance. After the chickens are thoroughly cool, or chilled, their heads should be turned back under the wing, and they may be packed in barrels ready for shipment. It is well to leave three or four inches of space at the top of the barrel, which may be filled with cracked ice, if the weather is warm

enough to require it. Under all circumstances they should be thoroughly cooled by placing them in a refrigerator or in a trough with cracked ice, before being packed in barrels for shipment. If packed in this way, poultry may be shipped with perfect security on a twenty-four hour journey.

There is no difficulty in shipping from almost any point in the State as far east as New York, as far west as Chicago and Cincinnati, or as far south as Richmond. Persons shipping poultry in this manner should take pains o carefully classify their fowls, and have only birds of a particular class in one package. They should all be fat and in goo l condition. One poor, scrubby chicken in a barrel may reduce he value of the whole lot. The poultryman should endeavort o have all of the fowls of a particular color together. In shipping do not mix the yellow skinned ones with the white skinned ones, or the yellow shanked ones with the lead colored or blue shanked ones. It always tends to reduce the value ot the poultry to mix in this manner, even when of first-class quality otherwise. Where it is necessary to slaughter and ship culls, they should be packed separately, and distinctly marked as second class. The poultryman who expects to command the highest price in the market, must see to it that every fowl shipped by him is first class in every respect, so that every one purchasing from him in future will understand that he will secure only the best.

Every package should be marked with the shippers name and address upon its and there is no objection to every chicken also bearing a tag with his name upon it. In this way, in a short time, a choice and continuous market can be built up.

Where you do not have enough dressed poultry to fill a barrel, a smaller package, as a clean box, can be used. Also see that the barrels or boxes are thoroughly scalded out, and then wash with salt water inside, before packing the poultry in them.

In shipping live chickens, it is best to use either a light wire coop, made for that purpose, or some of the patent folding coops, which should be carefully labeled with the shipper's name and address, so that they may be returned. Be careful

to not crowd the coops too full, especially in warm weather, as chickens are liable to be smothered in transportation under such conditions. The humane shipper will see that chickens are fed and watered before starting them on their journey. The same care should be observed in shipping live poultry that is indicated in shipping other kinds, if practicable. That is, to have only first class chickens in a coop together. If poor, second class chickens must go to market, put them in a coop by themselves. If they are mixed the whole lot will be graded by the runts.

SHIPPING EGGS.

Eggs shipped to market may be sent forward in crates manufactured for that purpose and provide with paste-board partitions which will keep them from striking against one another and breaking. The expressmen, however, are quite careless in handling them and even with this arrangement there is nearly always more or less breakage. Where special care is exercised, and dry chaff or fine cut straw is liberally sprinkled in between each layer, this breakage may be reduced to a minimum. Never use fresh or moist chaff or straw, as they are liable to sweat and spoil the eggs in a short time. Eggs may also be packed in barrels by placing a layer of straw about three inches thick at the bottom and around the sides and then placing the eggs in straw or chaff layer upon layer, packed so that there will be about an inch of the straw or chaff between each egg. When the barrel is packed to within about three inches of the top it should be filled in with straw carefully smoothed down, and the head of of the barrel put in. Care should be observed not to press the eggs while packing. About 70 dozens can be packed in an ordinary flour barrel. It is well to shake the barrel gently after every layer is put in. Whether shipped in crates or in barrels, the correct count should be plainly marked upon the package and care observed to send only fresh eggs. If stale eggs are shipped, they should go in a package by themselves and should be so designated.

Eggs shipped for hatching must be fresh, and should be carefully wrapped in paper and then packed in soft excelsior in suitable baskets for shipping. The most convenient form for single or double sittings, is the light baskets used for shipping grapes and other fruit. A layer of excelsior or dry finely cut straw should be placed in the bottom of the basket, and the eggs carefully placed in this with the large end up; and after the first layer is in, a liberal supply of finely cut straw or chaff should be poured in and the basket gently shaken so that it will settle in between the eggs. Be sure to avoid any violent shaking. After the eggs are all in they should be covered with excelsior about two inches thick and newspapers pressed down carefully over them, and over this may be fastened the lid. Or, if the basket does not have a lid, a piece of cheap muslin may be carefully sewed in all around the basket so as to keep the eggs in place. Where large shipments of eggs for hatching purposes are made, there is perhaps nothing better than the half bushel basket. The advantage of the light baskets is that the expressmen handle them carefully, and if eggs are properly packed in this manner, they are certain to arrive at their destination in good order.

Eggs received for hatching purposes should be allowed to rest in a cool room or cellar for twenty-four hours before unpacking, in order to allow them to properly settle before placing them under the hen or in the incubator.

THE PRICE OF EGGS.

The price of eggs shipped for market purposes, of course, is controlled by the supply and demand of the market. The poultryman shipping eggs to the several markets should carefully observe the prices, and take advantage of the days or seasons when the market is not overstocked. There are also whims of customers that have to be carefully met in order to command the highest prices. Some markets look with favor upon light colored eggs, and other markets wish the dark colored ones. The poultryman should be careful as far as prac-

ticable, to pack the eggs of uniform color and size in packages by themselves. These constitute choice eggs and command the highest prices when fresh. If mixed, of course, the price is liable to be cut.

The price of eggs for hatching purposes varies with the breed of fowls, the season of the year, and the reputation of the breeder for furnishing fertile, carefully selected eggs. In this case the purchaser is not buying eggs but buying stock; and he insists that the eggs shall be true to name, and shall be guaranteed of the highest quality in every respect. Eggs for hatching purposes where supplied in large numbers for incubators, cost from $3 to $10 per hundred, the high priced eggs being for choice, thoroughbred stock, and the low-priced being good fertile eggs for the production of broilers.

The greater part of the eggs sold for hatching purposes, however, go as single sittings of 13 eggs for chickens, 11 for ducks, 7 for geese, and 9 for turkeys. During the most favorable part of the season, April, thoroughbred eggs per sitting will cost about as follows:

FROM PENS SCORING.

Variety.	88 to 91 for sitting of 13 eggs, about	91 to 92 for sitting of 13 eggs, about	92 to 94 for sitting of 13 eggs, about
Brahmas	$1.75	$2.50	$4.00
Cochins	1.75	2.50	4.00
Black Langshans	1.75	2.50	4.00
Barred Plymouth Rocks	1.50	2.25	3.00
White Plymouth Rocks	1.50	2.25	3.00
Buff Plymouth Rocks	2.00	3.00	5.00
Houdans	2.00	2.75	4.00
Wyandottes	1.75	2.50	3.00
Red Caps	2.00	2.75	4.00
Black Minorcas	1.75	2.50	3.00
White Minorcas	2.00	3.00	5.00
Single Comb Brown Leghorns	1.75	2.50	4.00
Single Comb White Leghorns	1.75	2.50	4.00
Rose Comb Brown Leghorns	1.75	2.50	4.00
Rose Comb White Leghorns	1.75	2.50	4.00
Buff Leghorns	1.75	2.50	4.00
Blue Andalusians	2.00	3.00	5.00
Silver Spangled Hamburgs	1.75	2.50	4.00
Cornish Indian Games	2.00	3.00	5.00
B. B. Red Games	2.00	3.00	5.00
White Crested Black Polish	2.00	3.00	5.00
Golden Sebright Bantams	2.00	2.75	4.00

After the first of June these prices decline from ⅓ to ½, and most breeders allow their pens to become disorganized after about the first of July. Prices are usually higher in New York and New England than elsewhere, at least from quotations received at this office we may justly conclude this to be the case.

The percentage of eggs that will hatch is very uncertain, and persons who order sittings of high priced eggs need not expect every egg to hatch because it is a high priced one. There are various causes leading to disappointment—such as, the egg may not be thoroughly fertilized, it may have been injured in transportation; it may be damaged after being received by persons whose curiosity will prompt them to handle them, and frequently to shake them. An egg intended for hatching should never be shaken under any circumstances. Care must also be observed that no grease or oil comes in contact with them, as it proves uniformly fatal. Again, there is the greatest variation in the hatching power of different hens. At the Experiment Station we have noticed that some hens would hatch thirteen chicks out of thirteen eggs, while other hens sitting upon eggs taken from the same basket, laid upon the same day, and handled in all points just as the other sittings, would not hatch more than six to eight chicks out of thirteen eggs. It is difficult to explain, but such are the facts.

The regular fancier of poultry is not disappointed if he looses 40% of the eggs he purchases. But the amateur is liable to feel that he has been misled or deceived when he fails to get a full hatch, even though all experience indicates that the eggs may be handled with every possible precaution and still as much as 40% of them fail to hatch. It is unfair, therefore, to the breeder to expect all of his high priced eggs to hatch. They will very rarely do so, especially if transported several hundred miles, or if subjected to serious jarring during transportation. This has led many breeders of high classed poultry to refuse absolutely to sell any eggs for hatching purposes. The man who purchases eggs for hatching, must take the risks.

It must not be expected either that every egg produced by high scoring parents will hatch prize-winning birds. Even

with the most careful handling, many birds will be unsuited for exhibition purposes. A regular poultryman, who understands the difficulties, does not expect to secure more than one bird scoring 95 in one hundred. A bird which by careful scoring would reach 98, would be worth several hundred dollars. Birds scoring below 90 are very numerous; from 90 to 92, their number is greatly diminished; from 92 to 94, quite scarce; and from 94 to 96, quite rare; above 96, extremely difficult to secure.

CHICKEN LICE.

One of the worst pests that the poultryman has to contend with, is lice; which are particularly aggressive to their assaults upon chickens during the warmer months.

They are provided with a mouth that enables them to bite the chicken, but do not suck their blood; and where they are numerous, they frequently exhaust the energies and damage the health of the fowl, causing more loss than almost any disease that fowls are subject to. Frequently a hen that appears to be sick, and is standing around stupid and apparently ill, will, upon examination, be found to have nothing more serious the matter with her than that she is infested with lice, which are exhausting her on account of their immense numbers.

There are a number of varieties, all of them very small, ranging in size from the one-hundredth to the one-sixth of an inch in length. There bodies are divided into three sections, or parts; the head is very large and flat; the thorax or second segment, is roundish and considerably smaller than the head; the abdomen, or posterior segment is long, oval and plump. They vary in color, being brown, grayish or yellowish.

They keep up a constant irritation by annoying the fowl day and night, and preventing rest or sleep. A fowl infested with lice in large quantities, will not produce eggs; nor is it very good for food, as its condition is likely to be poor. The lice render a bird absolutely worthless. They find favorable places for growth in dark, damp poultry houses; and will always be found on poultry that does not have ample provisions for dust-

ing itself or wallowing in fresh earth. In a pen of chickens the lice will frequently congregate in greatest numbers upon particular fowls that may be in poor condition, and which have dry, scurfy skins.

Fowls infested with lice may be noticed to be uneasy and restless, and constantly pecking at different parts of the body and shaking themselves. They also have an inclination to dust themselves. An examintion of the chicken for lice is best made by spreading apart the feathers about the head and neck, and beneath the wings. The lice may also be found in the nests, on the perches, and in cracks and out of the way places about the chicken house.

Chickens will very largely free themselves from lice, if provided with a dust bath; especially if insect powder, or a small quantity of flowers of sulphur be added to the dust. Care, however, should be observed not to put too much sulphur in the dust bath, as it sometimes has a powerful effect upon the chicken. A very excellent means for destroying lice is well leached wood ashes, or fine coal ash dust. Chickens that have facilities for dusting themselves in this manner, are rarely seriously troubled with lice.

Where lice take possession of a chicken house, as they nearly always will, it is necessary to thoroughly cleanse the building; and the perches, dropping boards, and sides should be thoroughly cleansed with crude petroleum, or with kerosene emulsion; after which the building may be thoroughly whitewashed. The perches should be cleansed every week and sprayed with crude petroleum or kerosene emulsion; and the supports for the perches, where they hang against the sides of the house, should be thoroughly greased with crude vaseline, with soft axle grease, or some other impassable material for the lice.

Fowls treated in the manner indicated, and the poultry houses white-washed two or three times a year, will not be seriously affected with lice.

MITES AND TICKS.

These pests are frequently called lice, and are exceedingly annoying to all kinds of poultry. The common poultry mite is about 1-32 of an inch long, and about 1-70 of an inch broad. It has eight legs, and each foot has a claw. It is yellowish or brownish color except when full of blood when it becomes dark brown or dull red. It is one of the most destructive pests to poultry, and affects all varieties of domestic fowls, not confining itself to birds alone however, but will pass onto the bodies of animals, such as dogs, cats, cattle, horses, and sometimes people. It does its work at night, and retires at the approach of day to some dark or secluded spot. In the case of chickens, it will leave the fowl, and spend the day beneath the nests, in the cracks of the floor or walls or under the perches.

This parasite preys upon its victims by sucking the blood, and is especially destructive to young chickens, turkeys, and sitting hens. Many chickens that are not properly looked after, die from its attacks; and the owners wonder what is the matter with his chickens. They frequently become so annoying to a sitting hen that she leaves the nest before time for the eggs to hatch; or in her agony and effort to escape from their attacks, she breaks the eggs upon which she is sitting.

The same remedies mentioned for the lice are also applicable for the mites, so far as the sprays and white washing is concerned. A Carbolic Acid solution, 1 to 20, is also recommended as an excellent spray for treating the chicken houses, perches, and nest boxes. Nearly all parasitic pests for chickens can be gotten rid of, or sufficiently reduced in their activity, by keeping the chicken houses and perches thoroughly cleaned and well sprayed with crude petroleum. However, care should be observed not to go about the building with a lantern, or any other means of igniting it; and where kerosene emulsion is used, care should be observed to permit the buildings to dry out after spraying with it, as other dangers to the poultry may arise from having their quarters too damp.

A parasite that destroys more chickens than any other, or

perhaps than all others combined, is the gape worm; commonly called gapes. The gape worm is of a reddish color, and about ½ or ⅝ of an inch long for the female; the male is about one-fifth of an inch long, and is constantly attached to the female. This peculiar union causes the gape worm to be sometimes described as a branch worm. The head of the worm is flat, and arranged for sucking.

The worms attach themselves to the linings of the wind pipe between the mouth and the bronchial tubes. Three or four of them is enough to destroy a young chick, but a larger number is necessary to destroy an adult.

The worms coughed up are eaten by other birds and in this way they become infected. By experiment, it is found that a bird fed upon worms containing eggs, will develop gapes within two or three weeks. Another way of spreading the disease, is through the agency of earth worms. The eggs of the gape worms cling to the earth worms and in this way are eaten by the chickens, which in turn become diseased.

No one can mistake a case of gapes. The afflicted fowl has difficulty in breathing. It opens its mouth frequently and gasps for breath. There is some coughing accompanied by the expulsion of frothy slime. Death results from suffocation in some cases, and in other cases from exhaustion and secondary diseases.

When the disease appears in a flock, the afflicted fowls should at once be removed, in order to prevent the distribution of the parasite.

A chicken affected with the gapes can be relieved by a feather which has been stripped of its barbs except a small portion at the point. The point should be broken and turned back, dipped in vaseline and then cautiously introduced into the wind-pipe of the chicken. A few drops of spirits of turpentine or carbolic acid mixed with the lard or vaseline will be found advantageous in causing the worms to relinquish their hold when the feather comes in contact with them. After the feather is introduced into the wind-pipe, it should be gradually withdrawn, and turned between the thumb and finger while being drawn out.

If the operation is carefully performed, the worms will all be drawn out upon the feather. One treatment will generally cure the chicken; sometimes, however, it is necessary to treat a second time. The feather cannot be used on a second chicken unless it is dipped in hot water to free it of the worms clinging to it. Where a number of chickens are to be treated, they may be put into a box over which a sheet of muslin is spread, and lime sifted through the muslin top, the fowls being obliged to inhale the dust. The method is somewhat dangerous to the fowl, and results are not always satisfactory. Chopped onions and garlic mixed with the food, is also considered good. If the worms once get into the wind-pipe, there is no way of getting rid of the disease except to remove them, which must be done either by mechanical means, such as the feather or a looped horse hair, or by causing the chicken to sneeze so violently that it will throw them out of the wind-pipe.

Watering troughs and feeding places should be thoroughly disinfected with copperas solution (1 pound of copperas to two gallons of water); and the bodies of dead fowls should be burned, or buried deeply at a distance from the barn yard.

CHICKEN CHOLERA.

When it breaks out in a flock it is a very serious matter, and the owner is likely to find it very difficult to control. The symptoms are: The fowls becomes drowsy and dumpish in appearance and looks sleepy; the comb usually becomes pale or black; there is a diarrhea with a greenish-yellow discharge. Whenever it breaks out in a flock the well birds should not be permitted to come in contact with the sick ones. The roosts and runs of the fowls should be thoroughly disinfected and the fowls should be kept well nourished and in as good condition as possible. All dead birds should be promptly buried or burned.

The following prescription is said to be beneficial:

1 oz. of sulphuric acid; 1½ lbs. copperas (sulphate of iron); dissolve the copperas in 2 gallons of rain water; then add the

acid and stir well before using. Keep it covered and in a cool place and add 1 pint of the liquid to every gallon of drinking water furnished the fowls. This acts as a tonic.

The next most troublesome disease is perhaps the

ROUP OR DIPHTHERIA.

This is a contagious disease which may assume a very malignant form where the chickens are kept in dirty houses, or where the hens are allowed to become filthy. It attacks the throat, mouth, tongue, head and eyes. Usually the first indication of it is a catarrhal condition indicated by a watery discharge from one or both eyes and from the nostrils. It may also appear as a swelling on the head, or as a yellow splotch on the tongue, sides of the mouth, or in the throat. Chickens affected by it can be readily detected in the flock at night by their difficult breathing and the noise they make when they try to clean their throats and nostrils. We are confident that the best way to deal with it is to maintain perfect cleanliness in the chicken houses and grounds, and see that the chickens are well nourished and kept in vigorous health. If taken in time, about 8 out of 10 can be cured by dousing their heads, mouths and nostrils with crude petroleum, containing about 2 drachms of spirits of turpentine to the pint. This may readily be applied by a spring oil can, such as is used for oiling machinery. The chickens should be well fed, isolated and kept in warm quarters during the treatment which will require several days, and in some cases, perhaps weeks.

One of the best remedies that we have found, so far, is the following: Hydrogen dioxide diluted one-half by adding water. This is applied to the throat, nostrils and eyes by means of a spray or by a douche such as is used in medical practice for treating catarrhal troubles. The remedy and sprayer or douche can be had at the drug stores. This remedy rapidly dissolves the diseased tissue, removes it from the surface and kills the germs. The douche, if properly held to the slit in the roof of the mouth, will at one application wash out both the nostrils and the eyes.

The nostrils and eyes may also be sprayed, and as it thorough-

ly destroys the germs of the disease, the chickens rapidly recover. Where the tongue is badly covered with the diseased membrane, it is well to remove it as gently as possible by means of a swab. The surface should then be sprayed until it is cleared of diseased membrane. The portion that is diseased may then be dusted with fine boric acid powder, or can be allowed to heal without further treatment. If the latter course is adopted, it is better to grease the surface with a little vaseline or lard.

When it develops in the eye, the cheesy matter which forms under the eye lashes should be pressed out and the space inside washed out as well as possible. Unless the disease has taken too violent hold of the bird, three or four treatments in this manner will usually bring it around in pretty good shape. If it develops in common chickens, however, it is best to take off their heads at once, as any cure yet discovered requires more time and expense than the chickens are worth. Care should be taken to prevent the disease spreading, and whenever it makes its appearance in the flock the owner will find it necessary at once to adopt energetic measures, or it is liable to seriously affect the flock.

One of the best preventives of disease among chickens is to keep the poultry house and coops clean, dry and well whitewashed, and not allow the fowls to roost in a draught. If this precaution is followed, with abundant good sound healthy food and exercise, little trouble may be expected from ordinary poultry diseases.

There are numerous minor diseases which seldom require much attention. It is an excellent idea to paint the perches and spray the sides of the chicken houses with crude petroleum in order to prevent lice harboring about the roosts. Care should also be taken to have ample facilities for the chickens to dust themselves by wallowing in coal ashes or leached wood ashes or even ordinary road dust with a little lime added. This has a great tendency to prevent the lice from multiplying on the fowls. Very frequently when a fowl appears to be sick, if it be examined with care, nothing more serious will be found

the matter with it than it is infested with lice. It is a good idea where lice get started in a flock and become a serious pest, to put the chickens in a box painted with some of the liquid lice destroyers. A chicken cooped up with these preparations for a few hours, will be entirely freed from pests.

POULTRY JOURNALS.

As a means of increasing a useful knowledge of the poultry business, we recommend that every farmer take at least one poultry paper for the benefit of himself and family. They are published at extremely low rates, and afford, during the course of the year, an immense amount of valuable information for those raising poultry. If poultry papers be placed within reach of members of the family, it is extremely probable that that one or more members of nearly every farmer's family will become interested in this great bnsiness, which may be made such a valuable adjunct to general farming.

I append herewith a list of most of the poultry papers published in this country, for which I am indebted to the September number (1896) of the "Reliable Poultry Journal," one of the greatest poultry papers published in America. From this it will be seen that some of the largest poultry papers published in the country can be had at as low as 25 and 50 cents a year for the monthly papers, and at proportionate rates for papers published more frequently. If any poultry journal should have been everlooked in this list it is wholly accidental on our part.

AMERICAN FANCIER, published by Rodgers & Drevenstedt, Newburg, N. Y.; weekly; $1.50 per year; 16 pages, 14x10½ inches.

AMERICAN POULTRY JOURNAL, published by Morgan Bates & Co., Chicago, Ill., monthly; 50c per year; 32 pages and cover, 12x9 inches.

AMERICAN POULTRY ADVOCATE, published by Clarence C. DePuy, Syracuse, N. Y.; monthly; 25c per year; 28 pages, 9½x12 inches.

BARKS AND CACKCES, published by J. P. Lucas & Co.,

Topeka, Kan.; monthly; 50c per year; 16 pages and cover, 12x9 inches.

CALIFORNIA POULTRY TRIBUNE, published by Fred W. Parish & Co., San Diego, Cal.; monthly; 50c per year; 16 to 24 pages, 9x12 inches.

CALIFORNIA CULTIVATOR & POULTRY KEEPER, published by Goodwin & Thomas, Los Angeles, Cal.; monthly; $1 per year; 32 pages and cover, 11x8½ inches.

CANADIAN POULTRY REVIEW, published by H. B. Donovan, Toronto, Canada; monthly; $1 per year; 24 pages, 9x12 inches.

COLORADO POULTRY JOURNAL, published by John Herr, Denver, Colo.; monthly; 50c per year; 24 pages, 9x12 inches.

DER GEFLUEGEL-ZUECHTER, published by Henry E. Voight, Wausau, Wis.; monthly; 50c per year; 12 pages and cover, 9x12 inches.

FANCIERS' REVIEW, published by J. W. Darrow, Chatham, N. Y.; monthly; 50c per year; 16 pages, 10½x14 inches.

FEATHERED REALM, published by the Enterprise Publishing Co., Cambridgeboro, Pa.; monthly; 50c per year; 20 pages and cover, 8½x11 inches.

FANCIERS' MONTHLY, published by Charles R. Harker, San Jose, Cal.; monthly; $1 per year; 32 to 40 pages, 6x9 inches.

FEATHER, published by George E. Howard & Co., Washington, D. C.; monthly; 50c yer year; 42 pages and cover, 6½x9½ inches.

FARM-POULTRY, published by I. S. Johnson & Co., Boston, Mass.; semi-monthly; $1 per year; 16 pages and cover, 14x11 inches.

GAME FANCIERS' JOURNAL, published by George S. Barnes, Battle Creek, Mich.; monthly; 50c per year; 12 pages, 8½x12 inches.

GAME FOWL MONTHLY, published by C. L. Francisco, Sayre, Pa.; monthly; $1 per year; 40 pages, 6x10 inches,

HEN MAN, published by Petaluma Printing Co.; Petaluma Cal.; monthly; 50c per year; 12 to 20 pages, 9x12.

INTERSTATE POULTRYMAN, published by Interstate Publishing Co.; Tiffin, O.; monthly; 50c per year; 16 pages, 14½x11 inches.

INLAND POULTRY, published by O. L. Magill, Indianapolis, Ind.; monthly; 25c per year; 32 pages and cover, 6¼x9 inches.

INTERNATIONAL FANCIER, published by International Fancier Co.; Franklin, Ky.; monthly; 25c per year; 16 pages, 11x9 inches.

IOWA STATE POULTRY JOURNAL, published by Pierce & Kroeger, Ottumwa, Iowa; monthly; 50c per year; 24 pages 9x11½ inches.

MICHIGAN FANCIER, published by Prest & Purvis, Detroit, Mich.; monthly; 50c per year; 12 pages and cover, 11x9 inches.

MICHIGAN POULTRY BREEDER, published by George S. Barnes, Battle Creek, Mich.; monthly; 50c per year 20 pages 8½x12 inches.

MOUNTAIN VIEW POULTRYMAN, published by H. C. Austin, Johnson City, Tenn.; monthly; 50 cents per year 24 pages and cover, 6x9 inches.

MIDLAND POULTRY JOURNAL, published by E. B. Harrington, & Co., Kansas City, Mo.; monthly; 50c per year; 24 pages and cover, 11½x9 inches.

NEBRASKA STATE POULTRY JOURNAL, published by Stowell & Kent, Auburn, Neb.: monthly; 50c per year 20 pages, 9x12 inches.

NEW ENGLAND FANCIER, published by William H. Hamilton, Danielson, Conn.: monthly; 50c per year; 24 pages, 8x10 inches.

OHIO POULTRY JOURNAL, published by Robert A.

Braden, Dayton, Ohio; monthly; 65c per year; 28 pages and cover, 11½x9 inches.

POULTRY CHUM, published by F. M. Munger, DeKalb, Ill.; monthly; 25c per year; 12 pages, 9x12 inches.

POULTRY FARM, published by W. C. Adkins, Horton, Kansas; monthly; 25c per year; 16 pages and cover, 10½x8 inches.

POULTRY, GARDEN AND FRUITS, published by Poultry, Garden and Fruits Publishing Co., Marilla, N. Y.; monthly; 50c per year; 12 pages and cover, 11½x9½ inches.

POULTRY GRAPHIC, published by J. F. Schureman, Jr., Geneseo, Ill.; monthly; 50c per year; 16 pages and cover, 11x7½ inches.

POULTRY HERALD, published by Webb Publishing Co., St. Paul, Minn.; monthly; 50c per year; 20 pages, 10½x14½ inches.

POULTRY KEEPER, published by Poultry Keeper Co., Parkersburg, Pa.; monthly; 50c per year; 16 pages, 11x15 inches

POULTRY MONTHLY, published by Ferris Publishing Co., Albany N. Y.; monthly; $1 per year; 48 pages and cover, 11½x9½ inches.

POULTRY MESSENGER, published by the Messenger Co., Aurelia, Iowa; monthly; 25c per year; 14 pages 11½x8½ inches.

POULTRY NEWS, published by the Mickle Co., Lincoln, Neb.; monthly; 25c per year; 64 pages, 6x9 inches.

POULTRY TOPICS, published by Poultry Topics Publishing Co., Warsaw, Mo.; monthly; 25c per year; 24 to 40 pages, 9x12 inches.

POULTRY TRIBUNE, published by R. R. Fisher, Freeport, Ill; monthly; 50c per year; 28 to 36 pages, 9x12 inches.

POULTRY WORLD, published by H. H. Stoddard, Kearney Neb.; monthly; $1 per year; 32 pages, 11½x9 inches.

POULTRYDOM, published by Poultrydom Publishing Co.,

Henry, Ill.; monthly; 50c per year; 16 pages and cover, 11½x8½ inches.

PRACTICAL POULTRYMAN, published by F. C. Branday, Whitney's Point, N. Y.; monthly; 50c per year; 16 pages, 8½x11½ inches.

RELIABLE POULTRY JOURNAL, published by Reliable Poultry Journal Co., Quincy, Ill.; monthly; 50c per year; 64 to 100 pages and cover, 11½x9 inches.

SOUTHERN FANCIER, published by George M. Downs, Atlanta, Ga.; monthly; 50c per year; 24 pages, 9x12 inches.

SOUTHERN POULTRYMAN, published by A. S. Ellison, High Point, N. C.; monthly; 50c per year; 12 pages and cover, 11x9 inches.

SOUTHERN PIT GAMES, published by Jeff Fleming, Blakely, Ga.; monthly; 50c per year; 8 pages, 11¼x15½ inches.

SOUTHERN COCKERS' JOURNAL, published by Savage Bros., Belton, Texas; monthly; $1 per year; 12 pages, 11½x8¼ inches.

TAR HEEL POULTRYMAN, published by R. L. Simons, Shelby, N. C.; monthly; 25c per year; 8 pages, 13x10 inches.

TEXAS POULTRY INDUSTRY, published by Savage Bros., Belton, Texas; monthly; 50c per year; 24 pages, 11½x8½ inches.

WESTERN GARDEN AND POULTRY JOURNAL, published by Western Garden Publishing Co., Des Moines, Iowa; monthly; 50c per year; 32 pages, 8x10½ inches.

WESTERN POULTRY BREEDER, published by Owen & Co., Topeka, Kan.; monthly; 25c per year; 20 pages, 8x11 inches.

WESTERN POULTRY JOURNAL, published by E. E. Richards, Cedar Rapids, Iowa; monthly; 50c per year; 28 to 36 pages, 9x11 inches.

WASHINGTON POULTRY JOURNAL, published by L. Matthews, Seattle, Wash.; monthly; 50c per year; 12 pages, 11x15 inches.

CAPITAL NECESSARY.

The capital necessary to engage in the poultry business is dependent upon the character of poultry that is used and the manner in which it is conducted. In the first place, we believe that it is most profitable upon the farm for the farmer to keep one or two thoroughbred varieties; preferably one. Of course the fancier will keep as many breeds as he may find to his advantage. But chickens of one breed upon the farm can be more economically managed than a variety of breeds; and if the farmer keeps but one breed, he can frequently sell his eggs by the sitting, which is more profitable than to sell them for consumption. He will, of course, select his stock according to the trade he proposes to meet.

It is desirable upon the farm to have the poultry buildings as cheap as possible, but they should be so constructed that they can be readily cleaned, can be easily sprayed or whitewashed inside to free them of insects, and they should be tight enough to prevent draughts. There is nothing more dangerous to chickens than a building so open that draughts will blow through the cracks and cause the chickens to take cold which is very apt to run into roup. A house that is not constructed properly, is worse than no buildings at all. A chicken will be healthier out on the fence or in a tree, than it will in a draughty house. It may get its comb or feet frost-bitten under those conditions, and it may occasionally freeze to death; but even that is better than the roup in the flock.

A building for twenty-five hens can be constructed for as low a price as $25, and from that up. Persons wishing plans for cheap houses can secure them by sending 25 cents to the "Fanciers' Review," Chatham, N. Y., or "The Poultry Architect," by H. A. Kuhns, Atlanta, Ga. The publishers will send a pamphlet giving a description of a large number of cheap houses, together with bill of material and necessary drawings.

If it is proposed to go into the poultry business extensively and hatch early chickens to be developed and sold as broilers, it is necessary to have a room for incubators, large and properly heated brooder houses, with ample runs, scratching sheds and other improvements; all of which cost considerable money, and may involve investment of several thousand dollars of capital.

The poultryman should arrange his business so as to have something always on hand to sell at the time when it is scarcest and commands the best prices. Much depends upon properly housing and feeding his chickens so that they will begin laying, and produce as many eggs as possible between the first of November and the first of April, during the season of the year when eggs command the highest prices. His incubators should be started in February with the purpose of having early broilers in the market, as well as early maturing thoroughbred chickens for sale a little later. The broilers begin to come into demand about the first of May, and by this time the demanp for single sittings of eggs is beginning to decline. He may dispose of his early broilers, and along in August the trade begins to open for the thoroughbred young chickens, and this may be continued for the rest of the season, until the egg trade again opens. It must be understood, of course, that there is more or less egg trade extending throughout the year. A farmer who properly manages his poultry, may expect a larger percentage of returns from the capital invested, than from almost any business upon the farm.

A few chickens on a large farm requires little or no attention, but if it is proposed to keep several hundred chickens they will require his careful and continued attention. We are disposed to think that the best plan for the farmer is probably to colonize his chickens in groups of about 25 and place the colonies at a considerable distance from one another, allowing each colony as large a run as practicable. The fancier, of course, understands how to group his chickens in pens of limited area. And the farmer will gradually learn the art of keeping a large number of chickens upon small area, but it requires

so much care and attention to do this, that we advise farmers not to attempt it until they have had experience in the poultry business.

Suppose our farmer begins by an investment of $25 in poultry, and from $25 to $40 in poultry buildings, feeds his poultry liberally, sees that they are well cared for, and keeps a careful account of expenses and sales, and we are confident that he will be so much astonished and delighted at the results, that ever afterward he will be an enthusiastic poultry-man.